Volume XXXVIII.
Number 4.

JAN 13 1910

JANUARY, 1910.

$2.00 per year.
$3.00 with Directory.

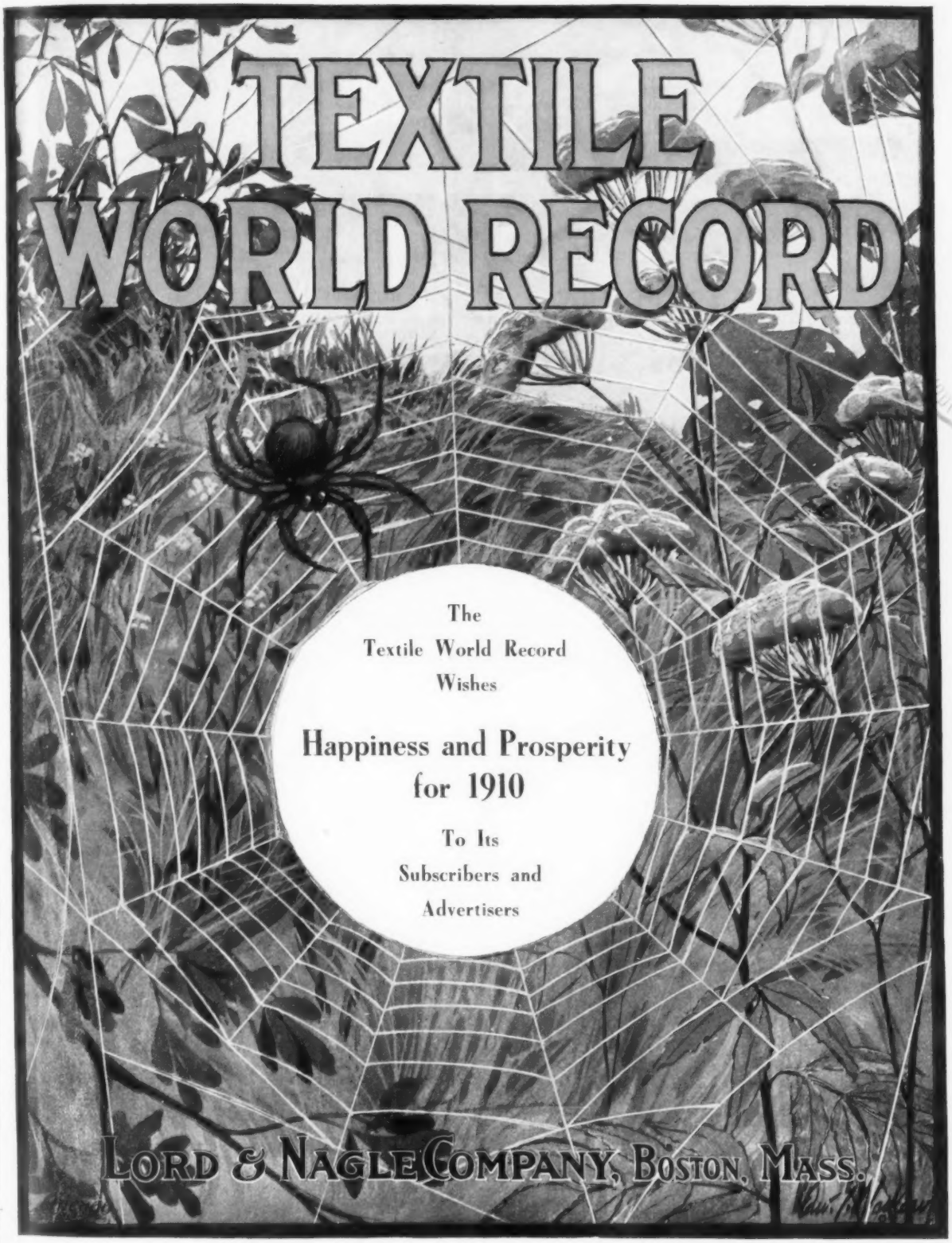


Table of Contents, Page 61. Buyers Index, Page 167. Index to Advertisements, Page 177.

Mercerizing Machinery for Piece Goods

—AND—

Yarns in the Warp or Chain

All Kinds of Outfits for Bleaching Thread and Soft Twisted Yarns.
Bleaching Machinery for Yarns in the Warp or Chain.

BLEACHING
DYEING
DRYING
AND
FINISHING
MACHINERY

Singeing Machines, Boiling Kiers, Washers Water, Chemic and Sour Squeezers.

Rusden Patent, Continuous Chainless Steamer, Aniline Agers.

Dyeing Machines, Open Soapers, Blanket Washers, Color Kettles, Horizontal or Vertical Drying Machines, with Copper or Tinned Iron Cylinders.

Water and Starch Mangles, Automatic Tentering Machines, Dyeing Machines for Chain Warps.

Dampening Machines. Calenders for Rolling, Glazing, Chasing and Embossing, also Calenders for Moire Finish.

Sole Manufacturers of Patented Flexible Cloth Expander for Cylinder Drying Machines, Calenders, Mangles, etc.

Combination Rolls made of Cotton and Husk, especially adapted for Soft Finish, Unequalled for Elasticity and Durability.

Cotton, Paper, Husk, Chilled Iron, Brass and Rubber Rolls, Electro-Deposited Copper Rolls for all purposes.

Padding and Drying Machines for Shade Cloths, Single and Double Cylinder Engines, Hydraulic Presses and Pumps.

Estimates, Drawings and full particulars of complete plants furnished on application

THE TEXTILE-FINISHING MACHINERY CO.

Howard Building, Providence, R. I.

Table of Contents for January.

PAGE

Monthly Comment 63

International Short Time in the Cotton Industry 69

Selling Agency for Southern Yarn 70

Seasonable Fabrics 74

Cotton Exchanges 77

Welfare Work in Japanese Mills 82

CORRESPONDENCE AND NOTES 90

Spinning Frame Builders—English Notes—Fancy Cotton Goods—Card Grinding—Hints on Backwashing.

QUESTIONS AND ANSWERS 106

KNITTING DEPARTMENT 112

The Knit Situation—Cost of Half Hose—A New Lace and Edging Machine—The Richter Full Fashioned Hosiery Machine—Singer Machine No. 81-3—Making Knit Goods Unshrinkable—An Improved Latch Needle—Knitting Mill News.

NEW MACHINERY AND PROCESSES 124

DYEING, BLEACHING, PRINTING, ETC. 137

Bleaching, Tinting and Finishing Lace Curtains—A Dye Jigger—Carbonizing Wool—Dye Recipes.

MILL NEWS 145

PERSONALS 152

NEW PUBLICATIONS 158

INDUSTRIAL NOTES 159

RECENT TEXTILE PATENTS 164

WOOL MARKET 185

COTTON MARKET 187

YARN MARKET 189

RAG AND SHODDY MARKET 196

SILK MARKET 199

DYESTUFFS AND CHEMICALS 200

MILL STOCKS 203

Correspondence.

We solicit correspondence on textile subjects. Articles accepted will be paid for. Name and address must always be given, not necessarily for publication. Subscribers are invited to make free use of our Questions and Answers Department; correspondence is strictly confidential.

HOWARD & BULLOUGH,

AMERICAN MACHINE COMPANY, LTD.

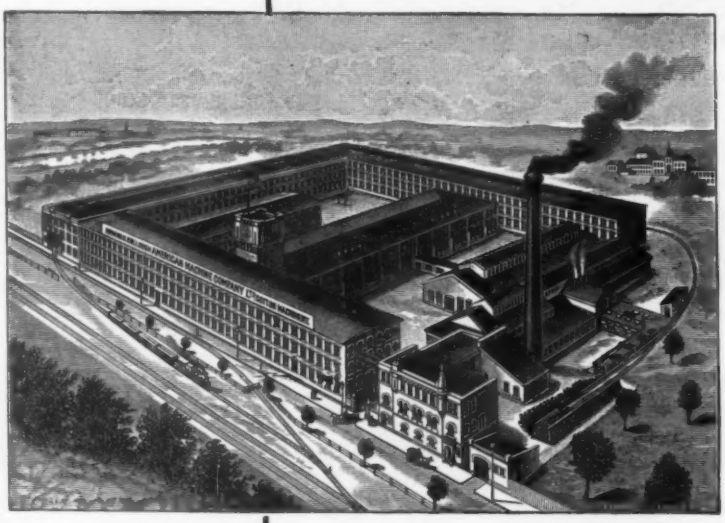
PAWTUCKET, R. I.

C. E. RILEY, Treas.
Boston Office, 65 Franklin St.

Southern Office
814-815 Empire Bldg., Atlanta, Ga.

COTTON MACHINERY

WE INVITE YOUR INVESTIGATION AND COMPARISON



Hopper Bale Openers
Feeders
Openers
Breaker Lappers
Intermediate and Finisher Lappers

Rev. Flat Cards
Drawing Frames
Slubbing Frames
Intermediate and Roving Frames

SEND FOR DESCRIPTIVE CIRCULARS WITH LISTS OF USERS.

NEW PATTERN SPINNING FRAMES
IMPROVED TWISTERS
For Wet or Dry Work

CONE WINDERS
WARPERS
SLASHERS

©CLB199586

TEXTILE WORLD RECORD

COMBINING

The Textile World and Textile Record.

VOL. 38 (NEW SERIES.) January, 1910 No. 4

Monthly Comment.

The New York Cotton Exchange.

The feature of the latest report on cotton exchanges by the Commissioner of corporations, that deserves more attention, is the comment on the methods of the New York Cotton Exchange. It is high time for that institution to set its house in order when a department of the government after a long and painstaking investigation stamps the methods of that exchange with the following words:

> When the future contract ceases faithfully to represent cotton, an exchange becomes little better than a bucket shop. In some respects it becomes worse than a bucket shop. No one claims that a bucket shop influences the price of cotton. Spinners and cotton merchants do not consult bucket shop quotations. They do, however, constantly consult the quotations of the New York Cotton Exchange, with a view to basing their forward commitments in cotton or cotton goods upon them.

In his report the Commissioner goes outside of the United States and shows that the methods of the New York Cotton Exchange lay a heavy burden on the foreign spinner:

> One of the most serious complaints against the New York Cotton Exchange comes from spinners and merchants doing business in foreign countries, on the ground that the misleading quotations promulgated by the New York Cotton Exchange have led to endless friction in the conduct of the spot cotton trade, as well as to serious loss.

This action of the Commissioner of Corporations in attacking the abuses in an American cotton exchange, not only because they are an injury to the domestic industry, but also because they injure legitimate foreign trade and industry is in every way commendable. Incidentally it shows the need of and the opportunity for international cooperation in the solution of this cotton exchange problem. There should be some means by which the experience of the world's cotton trade could be concentrated for the accomplishment of that object.

Losses in Lancashire Mills.

Returns from one hundred cotton companies in Lancashire for 1909, as compiled by John Kidger, of Oldham, show a loss of $1,322,270, or nearly 8 per cent. on the paid-up share capital of $16,652,955. The mills included in the statement have 8,395,630 spindles, or about one-seventh of the total in Lancashire. In spite of this heavy loss on the year's business the average dividend is 7 7/8 per cent., drawn from the reserve funds carried by most of the mills. In commenting on the showing the Manchester Guardian brings this serious charge against Lancashire cotton corporations, apparently without proper appreciation of its gravity:

> Mr. Kidger calculates that the loss on the combined share and loan capital is 3 1/3 per cent., and bad as this seems it would have been worse but for a curious reservation made by some of the most prosperous companies. In the boom years these were shy of disclosing their enormous profits, and so wrote down various stocks to nominal figures. Now when times have changed such

stocks have gone through a mystic process of appreciation apart from any real increase of value through advanced prices of cotton. It is to be feared that companies which are doing badly are also sometimes unscrupulous in the valuation of their stocks and make out things to be better than they are

Mill treasurers who get into the habit of undervaluing material and goods on hand in order to conceal profits, are not likely to hesitate about overvaluing stocks in order to conceal losses. Under such conditions the financial report of a corporation is worse than none at all. A deliberate juggling with the valuation of stock on hand has the same effect on the financial statement of a mill as juggling with a bank account, the cash balance or any other item would have. If one is to be winked at the others will be. We have grown accustomed to the flings, in great measure justifiable, from the other side of the Atlantic at the frenzied finance of American corporations, but it comes as a distinct shock to have the leading newspaper of Lancashire make with such nonchalance this damaging admission as to English mill financiering.

Welfare Work in Japan.

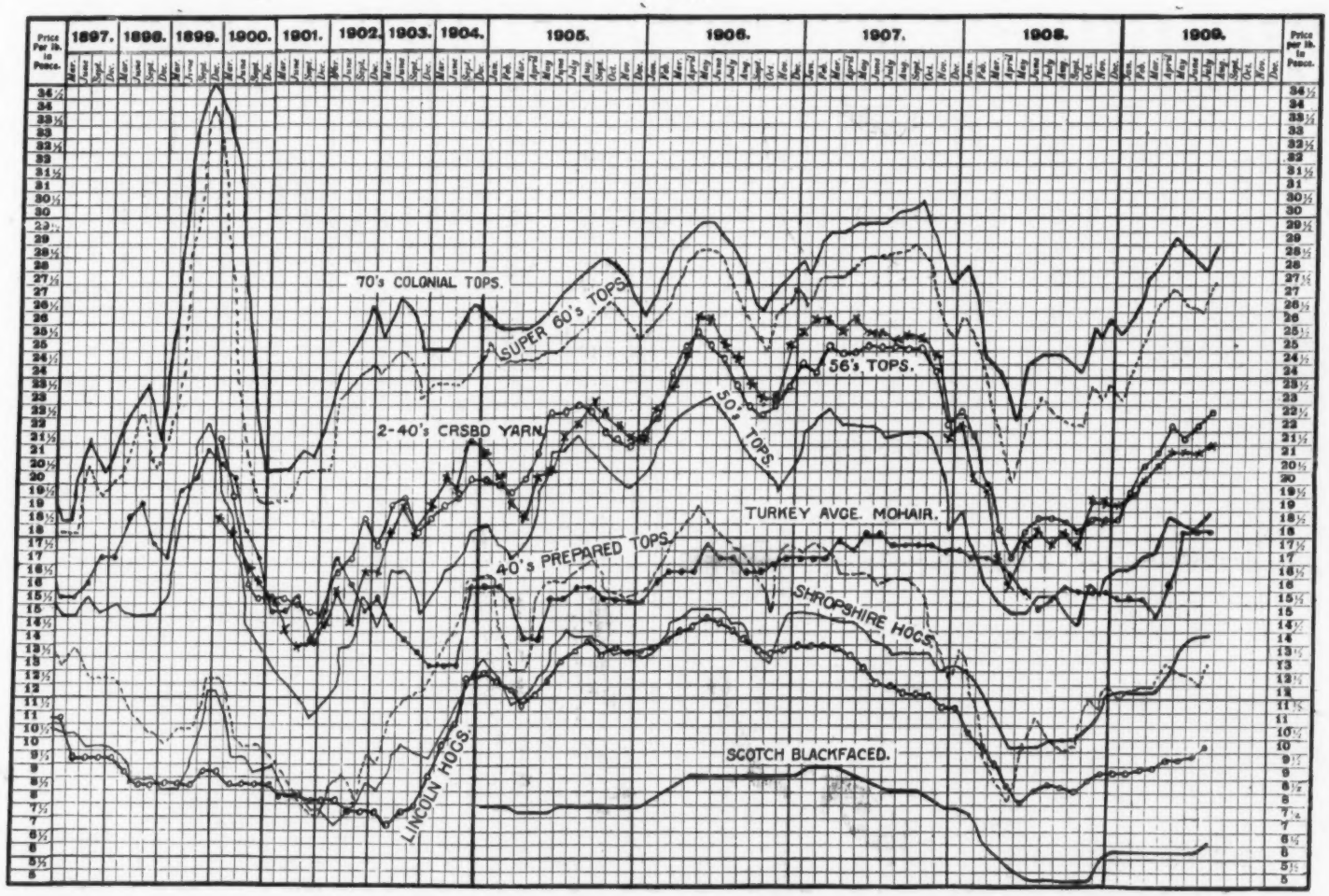
In this issue will be found an account of the welfare work at the Kanegafuchi Spinning Co., Tokio. This is the largest spinning company in Japan, giving employment to more than 14,000 operatives. An evidence of their progressive policy is found in the fact that they subscribe for thirteen copies of the Textile World Record. The president and superintendent of the company are with the Commercial Commissioners of Japan, now making a three months' tour of the United States, inspecting our industrial and commercial establishments. The account of the welfare work by this Japanese company shows that in this department of human activity, as in all others, the Japanese are nothing if not thorough. A plan that includes education of the operatives, care of the sick and injured, as well as of widows and orphans, hospitals, kindergartens, insurance, savings banks, correspondence between the operatives and their families, suggestion boxes, publication of trade papers, care of women during confinement, and pecuniary aid in the care of infants, would seem to leave little else to be desired in this world.

We are confident the system of welfare work by this Japanese mill will be of great interest to our readers, of whom many have devoted much attention to the study and management of this line of work in connection with textile mills. There will undoubtedly be many of our American readers who will consider that the Kanegafuchi Spinning Co. have gone too far in the work of promoting the welfare of their operatives. This may be true for the United States and far from the truth for Japan. Much depends upon the conditions under which such undertakings are carried on, and regardless of whether the Kanegafuchi Co. are going farther than would be desirable in this country, it is certain that we can gain much instruction from the account of their welfare work.

Course of the Wool and Tops Market at Bradford.

We believe the Textile World was the first to publish charts showing the course of prices for textile materials with the lines extended to correspond with the fluctuations to the date of each issue. Charts of this kind first appeared in the Textile World in June, 1900, and have been an uninterrupted and popular feature of the magazine ever since. There have been a number of imitators, the most recent being The Wool Record of Bradford, Eng., which in its issue of Oct. 7, gave the chart of wool and tops prices that we reproduce on the opposite page. In no other way can one obtain so accurate and compehensive an idea of the course of prices as by a study of a price chart like this.

The total imports of foreign wool for the fiscal year 1909 were 266,409,304 pounds, as compared with 125,980,524 pounds for the year preceding. Of the imports for 1909, 99,046,169 pounds were of the relatively coarse, third class or carpet wools, not produced in any considerable quantity in America. Of the fine wools retained for consumption in this country, 34.6 per cent. were foreign.



FLUCTUATIONS IN PRICES OF WOOL, TOPS AND WORSTED YARN AT BRADFORD, ENGLAND.

International Cooperation in the Cotton Trade.

In this issue will be found a review of our October editorial, "International Short Time," by Moritz Schanz, Chemnitz, Germany, taken from the Deutsche Industrie-Zeitung. Herr Schanz will be remembered by many of our readers as the representative of the German Colonial Cotton Association, at the Atlanta Cotton Conference in 1907. While his review indicates plainly his general agreement with our attitude and his ability to look at the question from the American, as well as the European standpoint, we must take exception to this passage in his article:

"In ihrem Verhalten dem Ausland gegenueber alle Amerikaner sich solidarisch fuehlen muesstcn."

[In his estimation all Americans should stand united in opposition to foreigners.]

Herr Schanz is mistaken on this point. Our contention is that American cotton manufacturers cannot safely ally themselves with foreign cotton manufacturers to carry out the main object of the International Cotton Federation, which is to depress the price of American cotton by restricting its consumption by the mills. We will not repeat here the reasons for this position, which English newspapers have been able to obscure, but not to refute. Our object now is to restate the proposition alongside of Herr Schanz's interpretation of it in order to show the great disparity between them.

Our course for years disproves Herr Schanz's statement that we have advocated solidarity among Americans in opposition to foreigners. Previous to 1905 the American and foreign branches of the world's cotton trade were practically strangers to each other, and as a result mutual distrust was the most prominent feature of their relations. It was in that year that circumstances placed us in a position to speak for the American cotton industry at the International Cotton Congress at Manchester, and later in the year at the meeting of the New England Cotton Manufacturers' Association at Atlantic City. We refer Herr Schanz and all disposed to agree with him to our words on those occasions. As far as international short time is concerned we spoke then as we speak now. But in addition to this subordinate issue of short time we urged a union of all branches of the cotton trade, foreign and American, to further such objects as were for the benefit, not alone of the American branch, nor of the foreign branch, but of the entire trade irrespective of geographical divisions. Here is the closing paragraph of our Atlantic City report:

> My visit to Manchester led me to believe that the cotton manufacturers of Europe are desirous of cooperating with the cotton growers and cotton manufacturers of America and that they would be glad to send representatives to this country to investigate certain questions whose solution is for the benefit of all. They are restrained from taking this step by the fear that such a visit in the absence of a formal invitation from the manufacturers and growers of America would be taken as an affront, as an unwarrantable intrusion into their neighbor's affairs. There are, however, many conditions in the United States which they, as buyers of 8,000,000 bales of American cotton every year, have a right to investigate on the spot and discuss with authority. This field for investigation and discussion could be greatly extended with benefit to all and without arousing the opposition of any conflicting or divergent interests, if the cotton growers and manufacturers of the United States would meet foreign manufacturers half way in their evident desire for a friendly international conference.

As a result of that recommendation the New England Association within a few hours passed a resolution to invite the International Federation, the Southern Cotton Association and other American manufacturing associations to join in an international cotton conference to be held in the spring of 1906. This was the origin of the First International Cotton Conference at Washington in 1906, which was followed by the second at Atlanta in 1907.

The conference at Atlanta passed a resolution approving of an international cotton committee, representing all branches of the trade, to investigate and recommend solutions for the various problems affecting the cotton industry. If that plan had been carried out it would have united the world's cotton trade for the improvement of the baling of cotton, for the suppression of the evils

of speculation on cotton exchanges, and for all objects for the general good. And it would have made no difference whether the evil to be suppressed was in the United States or elsewhere, whether it was the cotton exchange at New York or at Liverpool that was to be attacked, whether the ginning and compressing trust that was to be regulated was on American soil or not. If the object was for the common good the organized power of the world's entire cotton trade would be exerted for its accomplishment.

That was the Atlanta plan, and it is well known that it has not been carried out because the European cotton associations, and particularly those of Lancashire, blocked it by urging instead the impracticable idea that the American cotton manufacturing associations join the International Federation, whose main object was the promotion of organized international short time for depressing the price of American cotton and raising the price of cotton goods.

These are facts of which the proof is on record. We restate them here because Herr Schanz's article indicates that he in common with others may be laboring under a misapprehension as to who are the real friends of international cooperation in the cotton trade.

Cotton Trade Weights and Measures.

The Chamber of Commerce of Manchester, Eng., submitted to its members resolutions adopted by the British Weights and Measures Association, George Moores, Secretary, in favor of (1) the adoption of the pound as the unit of weight in the storage and transportation of cotton, (2) the quotations of prices on all cotton goods in pence and decimals, instead of pence and vulgar fractions. A majority having approved of the recommendations the Manchester Chamber of Commerce has announced its support of this policy to dispense with the use of the gross hundred weight, quarters and vulgar fractions in this branch of the cotton trade. This is in line with the orderly and natural development of weights and measures.

Wool Waste.

The by-products of woolen and worsted mills have advanced in price to such an extent as to create a most serious problem for users of these materials. The supply is limited and manufacturers of goods made from them are facing a raw material famine. These products include all kinds of wool wastes, such as yarn waste, card waste and similar by-products. Prices cannot go much higher, for two reasons. First, they have now reached the limit of the purchasing power of the users; second, they are near to the importing point. Owing to there being no well established standards of quality for wool by-products it is difficult to make comparison between foreign and domestic prices for these materials. In order, however, to determine the relative values as closely as possible we obtained four samples of white worsted yarn waste from one of the leading dealers of Boston. These were sent to our representative at Bradford, Eng., who had the stock appraised there. Following is his report:

Halifax, Eng.,
Dec. 21, 1909.

I took your spinning waste samples down to Bradford today and got them valued by a friend who has a very large trade in this material. He buys from spinners, gets the thread pulled and blends it to standard qualities for resale. These are his prices, which were checked in my presence by his waste buyer.

No. 31 low quarter blood	8½	pence
No. 32 1/4 blood	11	pence
No. 33 3/8 blood	12	pence
No. 34 merino	16½ to 17	pence

You see that except in one instance the Bradford valuation is just about 20 cents cheaper and this, of course, is the extent of the duty.

Were your manufacturers to import these wastes they would practically be obliged to have them pulled. Otherwise it would be impossible to offer quantities of a sort and to make contracts forward. You might search all Bradford with one of your samples in hand and find only a few hundred pounds that could be called a match for any one of them, as the Bradford practice is to sell the stock in the garnetted state. I take it, therefore, that the effective duty is not the 20 cents of Art. 373 on yarn waste, but the 30 cents of Art 372 on garnetted waste.

I may add that the prices of these wastes are less definitely and publicly fixed than prices for tops or noils or fleeces. They are the spinner's waste material and he is not always exactly in-

formed as to the value of each description. A buyer coming to the mill to clear the whole lot of waste may therefore pay more than he should for one kind and less than he should for another. So long as he gets the whole cheap enough he is satisfied. You cannot depend on all waste dealers to tell you values accurately, but you can have every confidence that the rates named are the prices my friend would pay upon the natural basis of the day's values.

In his opinion No. 34 at 54 cents is relatively much the cheapest.

The Boston and Bradford prices on these four grades of worsted yarn waste are shown in parallel as follows:

	Boston	Bradford
No. 31 low 1/4 blood	32 cents	17 cents
No. 32 1/4 blood	42 cents	22 cents
No. 33 3/8 blood	45 cents	24 cents
No. 34 fine	54 cents	34 cents

On the low grades the Boston prices are practically double those at Bradford. This exhibit is of especial interest at the present time when buyers are scouring the market in vain for wool substitutes, which are essential for the manufacture of medium priced wool goods.

The scarcity and high price of desirable wool substitutes is of more importance to the wool manufacturing industry than appears at first glance. There has recently been a sudden and general change of fashion from smooth to rough faced wool goods, which has in considerable measure diverted the demand from worsted to carded woolens. The popularity of carded woolen goods will, however, be short-lived if manufacturers yield to the temptation to adulterate their goods by using as little wool and as much cheap shoddy as can be spun into a thread and woven into cloth. Such a policy will result in fabrics that will turn the consumer back to the worsted fabric and finish. The scarcity of stock for carded woolen goods, to which we have referred, makes this danger the greater. For that reason carded woolen manufacturers should exert themselves the more strenuously to produce serviceable fabrics that will win and keep the good will of the ultimate consumer. The carded woolen industry has great possibilities for good and for ill, for good fabrics and for poor fabrics, and now is the time for manufacturers to decide which they will choose. Our advice at the beginning of the new year to carded woolen manufacturers is that they keep their products up to a high standard. By doing this they will hold the position that their fabrics have regained in the market.

Wages in the Silk Dye Houses of Germany.

A strike of the dye house operatives at Krefeld, Germany, some months ago resulted in an agreement between employers and employes upon the following price list, which went into effect on December 4, 1909:

		Per week
1.	Male Apprentices, First year	$1.44
	Second year	2.16
	Third year	3.12
2.	Female Apprentices, First year	1.20
	Second year	1.92
	Third year	2.64
3.	Females under 19 years	3.12
	Over 19 years	3.60
4.	Journeymen, 19 years	4.44
	21 years	5.04
	24 years	5.64
	Above 24 years	5.76
5.	Dyers, 17 to 18 years	4.80
	18 to 19 years	5.04
	19 to 20 years	5.52
	20 to 21 years	5.76
	21 to 23 years	6.00
	23 to 25 years	6.24
6.	Helpers, First year	4.32
	Second year	4.80
7.	Night workers receive an extra allowance of 48 cents per week.	
		Per hour
8.	Overtime, Dyers	.144
	Journeymen	.12
	Male apprentices	.072
	Females	.084
	Female apprentices	.06
9.	Sunday work, overtime price and an extra allowance of .025 per hour.	
10.	Working time, 10 hours per day.	
11.	A day's notice for termination of employment is required.	
12.	Certain days named as holidays.	
13.	Pay day, Friday.	

INTERNATIONAL SHORT TIME IN THE COTTON INDUSTRY.

BY MORITZ SCHANZ, CHEMNITZ, GERMANY.

(From Deutsche Idustrie-Zeitung.)

The Textile World Record, which is the most important textile journal in America, publishes in its October number an article entitled "International Short Time," in which the editor lectures his countrymen because they have entertained the plan of bringing about united action with the European cotton manufacturers for the purpose of restricting the consumption and depressing the price of American cotton by means of international short time in cotton mills. While the editor concedes that short time is a proper and wholly justifiable means for meeting a disarrangement of supply and demand in the raw cotton and manufactured goods markets, yet he makes it very plain that the conditions vary widely between different countries and branches of the business and that as a result a general short time policy is impracticable. He considers it thoroughly un-American for his countrymen to help depress the price of American cotton, for in his estimation all Americans should stand united in opposition to foreigners.

The gain or loss to American industry by reason of the difference in the price of cotton is illustrated by the exports of cotton from the United States for the year ending June, 1909, the amount being 4,448,000,000 pounds valued at $417,000,000 or 9 3/8 cents a pound. On Oct. 5, as the European cotton spinners and weavers were assembling in Frankfort to consider the question of a general curtailment of production, middling uplands was selling at 13 1/2 cents a pound, at which price the exports for the year named would have been worth $600,000,000, a gain of $183,000,000. Since then the price has advanced still further to 15 cents a pound. That the sole interest of Europeans is in cheaper American cotton is easily understood, but for America the question is entirely different. America has peculiar industrial and social conditions, a sparse population, great natural resources, and, as a result, much higher wages than in other countries. In order to maintain this high rate of wages a high tariff on foreign goods which compete with American products has been maintained. Raw cotton, however, is subject to no duty but is admitted free. America possesses a practical and indestructible world monopoly of this article. Nevertheless American cotton planters, because of the lack of a protective tariff, are brought into direct competition with the Egyptian fellahs and Indian coolies. It is, therefore, unreasonable for American cotton manufacturers to begrudge the American cotton growers the high price for cotton. This would be a sure means of embittering the relations between the various industrial classes of America and to restore the vast fading sectional lines in the United States.

A union with the European cotton manufacturers in their short time policy means nothing less than undermining the entire American tariff policy which is designed to protect all American industries. The European cotton manufacturers need cotton at low prices in order to produce cheap goods for sale to the famished hordes of Asia and Africa, where about 400,000,000 people are forced by England against their will to submit to the curse of free trade. The American cotton manufacturers should consider the rights of the American cotton growers.

The contention that the International Cotton Federation is fighting the cotton gamblers and not the cotton planters is rejected as unsound since it is impossible for anyone to determine where the effect of supply and demand ends and that of gambling begins. Moreover short time in the mills would not counteract the operations of the gamblers because they gamble as readily for a fall as for a rise and with equally disastrous results to the grower and spinner. The way to contend with the speculators is not for the spinners to try to beat the gamblers at their own game, but for all branches of the cotton trade, growers, handlers and manufacturers, to unite for investigating the evil and applying the remedy. After that is done no coun-

try would refuse to apply the remedy by suitable statutes. The first steps to this end were taken at the Atlanta cotton conference in 1907. Principally because of the action of the European cotton interests who opposed the formation of an international cotton committee, the efforts thus begun were not continued. Whatever means, however, may be taken to suppress the cotton gamblers, international short time is for Americans not one of them. The peculiar conditions of the United States forbid it and the only course for American cotton manufacturers is to adjust the running time of their mills to suit American conditions.

SELLING AGENCY FOR SOUTHERN YARN.

Not in years has the cotton manufacturing trade faced a more serious situation than at present. The advance in the price of cotton to over 15 cents, with the prospect that the high prices are to continue indefinitely, makes it necessary for the trade to readjust prices and fabrics to conform to the changed conditions. Medium and coarse yarns and fabrics are affected most because of the larger proportion of the total cost that is represented by raw material. This accounts for the active measures taken by Southern manufacturers to bring about a readjustment of prices for goods. On January 4 a largely attended meeting of Southern spinners was held at Charlotte, many representatives of Northern commission men being present. The sentiment was unanimous in favor of curtailing production when selling prices were less than cost. A schedule of minimum prices was adopted by the following resolution:

Resolved, That we recommend the adoption of the following schedule of prices, and unless these prices can be secured, then we urge immediate curtailment. The schedule is as follows:

8/1 hard 24, soft 24½; 8/2 and 3, hard 24½, soft 25; 10/2 and 3, hard 25, soft 25½; 12/2 and 3, hard 25½, soft 26; 14/2 and 3, 26 and 26½; 16/2 and 3, 26½ and 27; 20/2 and 3, 27½ and 28; 24/2 and 3, 28½ and 29; 26/2 and 3, 29 and 29½; 30/2 and 3, 30 and 30½; 36/2 and 3, 36 and 36½; 40/2 and 3, hard 39; 50/2 and 3, 44; and 60/2 and 3, 50.

This action and the general situation in the cotton trade have revived interest in the plan for a selling agency for Southern cotton yarn, concerning which a Southern correspondent sends us the following letter:

Charlotte, N. C., Dec. 15, 1909.

Editor Textile World Record:

The most important matter now attracting the attention of the cotton yarn manufacturers of this State—and the majority of the Southern States for that matter, for the movement is rapidly spreading—is the proposition embodied in the resolution adopted at the meeting of the executive committee of the Cotton Manufacturers' Association of North Carolina at its meeting in this city a few weeks ago recommending the establishing of a Southern Yarn Selling Agency.

The impression seems to have gone out in some quarters that the object of such an agency is antagonistic to the commission merchant, but manufacturers declare this not to be the purpose of the agency should the plans for its organization be successfully carried out. While it may, in a measure, strike the commission merchant, the scheme is being put on foot to protect and preserve Southern yarn mills.

Four reasons are given by the manufacturers for the attempted organization of such an agency. It is claimed that a reduction in cost of selling yarn will be brought about, the necessity of consigning yarns will be overcome, cancellation of orders and postponement of deliveries will be prevented, and that there will be brought about a regulation in production in conformity with existing demands.

As to the first of these objects, it is estimated that from two to five million dollars annually can be saved to the cotton yarn mills of the South by the selling agency. There are practically 2,800,000 spindles making yarns exclusively in the South and the average count of the yarn made is 22s. The production of these spindles is about 320,000,000 pounds annually, which, at 22 cents per pound, would total about $70,000,000. The present selling commission for such yarns is 5 per cent., 3 per cent. discount, making a total paid by Southern mills to put their product on the market of

$5,500,000. Manufacturers say it has been demonstrated that this product could be sold through such an agency as the one contemplated at a cost not exceeding 3 per cent., thus making a saving $3,500,000 annually. Even should it cost 4 per cent., as some contend, the saving would amount to $2,800,000; or at 5 per cent. the saving would be $2,000,000. It is not believed, however, by those in close touch with the situation that the cost would exceed 4 per cent.

Carrying the figures a little further, it is seen that on the basis of a 3 per cent. saving to the mill it would amount to about $1.25 per spindle. Thus a 10,000-spindle mill, costing $200,000 to build, could save about 6 per cent.

As to overcoming the necessity of consigning yarn, a practice which the manufacturers claim is ruinous, a selling agency as proposed could finance the product of the mill during a time of depression in the market, by warehousing the yarn, and the collateral which could thus be offered would be as safe to the banker on a 75 per cent. market valuation as government bonds. The mill would not be forced to sacrifice the yarns as under present methods sometimes has to be done.

By preventing cancellation of orders and postponement of deliveries, thousands of dollars could be saved to the manufacturer. It has become a common practice now for a buyer when the market goes against him to cancel his contracts or postpone his deliveries, thus making the mill the loser. It is admitted that the selling agency might have to adopt drastic measures for a time at least, to put a stop to this trick of the trade, but that it could be done and would be done.

It is said that the agency would regulate production. It would always be in close touch with supply and demand and the needs of the various markets. Should it appear that a surplus or an accumulation was threatened in any particular count of yarn, the agency could forestall it by advising mills spinning that number to switch off pending the adjustment of the apparent accumulation.

Tombigbee.

Southern cotton spinners have for years agitated the question of selling their yarn through a central selling agency, eliminating the commission houses and with them the serious trade abuses which now exist. Interest in this plan has recently been revived, and a resolution endorsing the central selling agency idea was adopted by the Cotton Manufacturers' Association of North Carolina. A Southern advocate of the plan states his views in the letter signed "Tombigbee," which follows. In order to obtain the opinion of the cotton yarn trade we submitted "Tombigbee's" letter to a number of the leading yarn commission merchants and the replies are given below:

1. I appreciate your effort to get views of more than one person on this subject and I am glad to express myself on this or any other subject that I am familiar with for your benefit or to effect a better understanding throughout our particular line of business, but after reading this article carefully, it is so perfectly absurd and childish in its theory and deductions that it is not worth the consideration of earnest busy men. This may seem hard, but I can say it with good grace because I am first, last and foremost a direct seller.

The whole thing reminds me of the theory of an enthusiastic friend of mine who wanted to go into the chicken business and had the profits figured out on paper to a nicety. He started with the highest possible, one egg per hen per day, 365 days. He said that that was hardly likely and would scale it down to 75 per cent. and to make it "dead sure" would say 50 per cent. or 182 eggs per hen. Now it was to cost so much to keep each bird and the average value of each egg was so much with the profits proportionate. "If one hen would do this a thousand hens would do a thousand times, etc., etc."

Now as to the yarn business. In the first place, he says on his estimated $70,000,000 worth of yarn the selling cost through commission house is 5 and 3 per cent., making a total of $5,500,000. He "contemplates" doing this at a cost not exceeding 3 per cent. thus saving $3,500,000. "It might cost 4 per cent." Even at 5 per cent. there would be a saving of 3 per cent. What becomes of his 3 per cent. cash discount? In other words, his plan is to have his Southern agency sell this yarn for nothing, I mean contribute their services. The cost is to be 5 per cent. at the outside, the 3 per cent. of course is cash discount and never received by the commission house, it constitutes part of the price by the commission house. As to the 5 per cent. the way it has been necessary to handle business in the past few years, there is

nothing in the yarn business for a commission house even at 5 per cent.

The houses that have made money, have speculated on the low market, bought almost entirely for their own account in advance of actual orders, because it is a fact that spinners' price faithfully quoted by a selling house will not interest the trade once out of a hundred times on this kind of a market. They are generally able to buy at a cent less per pound from some dealer who already owns his contract at a lower value. The worst feature is, every day the spinner has offers from the selling houses at perhaps one cent above the price they are actually selling to the trade at. This makes the spinner hold prices stiff and prevents non-speculating, small dealers or large ones for that matter, making a single transaction on the open market. That is to say, it is absolutely necessary that the dealer or selling house have yarn at a lower cost than current quotations to make an actual sale of any consequence.

I hope you will bear with me in writing this so fully, but the occasion requires it, and I think it may possibly throw some new light on the subject that you can pass out to the trade in a way that will be of benefit.

Originally the relation between commission house and spinner was mutually satisfactory. The latter was practically dependent on the former for money to buy cotton or any special purpose. This led to the consignment of merchandise as collateral on notes. Commission houses rendered account of sales at regular periods, or when they got ready and settled the interest items at that time with credits against loans.

You will see this was of great advantage to the commission house and one prominent old-time-merchant told me ten or twelve years ago, that his banking end of the business paid better than the commission end. This tells its own story. As a result large abuses crept into the trade and unprincipled houses turned every possible trick for a dollar, and the spinners discovered from time to time the treachery, falsified accounts and general imposition. They rebelled and in many instances have had their knives out for every selling house ever since, so we come back to the old fashioned plan of honest trading with honest merchandise; let the mill select a safe, reliable selling house or salesman, individual, on commission or salary; let them make first class merchandise, the best they can, be honorable in all their dealings, sticking to a contract, deliver merchandise up to standard, whether the price is against them or for them, and cooperate with the salesman, who in turn must play square with them and do no speculating; let them have full knowledge of their orders, who they go to and what price they bring, be quick to rectify occasional errors. If these conditions are observed the results are certain. A solid business connection and a good reputation. With good judgment in selecting customers on the part of the selling house and good sense on the part of the mill as to the purchase of raw material, success is bound to follow if there is such a thing within the range of possibility.

In the past few years cotton spinning has been in a state of chaos and the various methods of selling and buying on the part of speculators has made it impossible to sell from day to day on a price that would let a spinner out whole if he figures his cost on the current market prices of raw material. This is unfortunate, but so far as my experience shows, absolutely true.

This fanciful theory of Mr. Tombigbee presupposes ability to fraternize and cooperate for mutual assistance in a way that as a rule has not been discoverable among Southern spinners.

---

2. The statements in the letter covering saving of cost, prevention of cancellations and the regulation of supply and demand, we do not consider at all reasonable. Most mills that have tried direct selling have not found it as profitable as they were inclined to believe, and the cost of putting their goods on the market, taking care of bad debts and other incidentals that arise in mercantile business, amounts to more than the 5 per cent. commission for which their account is guaranteed.

Neither do we find, as a rule, that buyers of yarns are willing to deal direct with mills for the simple reason that they prefer placing their business with houses with whom they are in close touch and where they know their complaints will be promptly taken care of. If the Southern mills would confine their production to reliable commission houses and follow out the policy that is generally adopted by the cloth mills, conditions would be greatly improved at both ends.

---

3. The plan for a direct selling agency for Southern mills is too ridiculous to discuss. This thing has been tried repeatedly by the Southern spinners, and usually it is by someone who wants to make money out of it themselves. It has been a failure and in our opinion it will be. This has been agitated by a few men, and we think it will not amount to anything.

---

4. After carefully reading over the letter on the proposed "Southern" yarn selling agency in the South, I most heartily agree with the plan, and think such an organization should be formed. Such a combination would overcome many of the bad features now in vogue. Rules and regulations can without doubt be adopted by the mills that will put a stop to the pernicious habit of cancellations or postponements of deliveries. Just as soon as the purchasers find they will be obliged to place their orders under binding rules, just so soon will there be more care in placing orders. There may be trouble at the beginning owing to the education buyers have received from dealing with the commission houses, but all this will be overcome in due time and the spinners will save much money and be better protected. Reputable yarn brokers could do business with the central agency to much better advantage.

---

5. We have read with a great deal of interest the article, "Selling Agency for Cotton Yarns." Unquestionably there are a number of evils existing in the yarn trade which should be corrected, but we seriously doubt that the plan proposed, in the long run, would better the condition of the mills or increase their profits. A central selling agency might operate to the advantage of the mills on a rising market, or when there was a free demand for goods. Under adverse conditions,

which unfortunately obtain too frequently these days, the very keenest insight into varying conditions in different markets must be had, and it is not reasonable to suppose that any single house could completely master the situation. It is improbable that a central selling house could do any more to prevent cancellation than if the accounts were distributed among different sellers, as at present.

It has been said that the yarn mills involved in this movement are not taking the wisest course to accomplish their ends, and that the main trouble lies in the fact that many selling agents, strictly speaking, are not commission houses. It is true that on the orders which the mills receive from them, a commission is charged, and it is quite as true that in a great many cases the orders which the mills receive are not bona fide sales, but are purchases made by the selling agent for his own account. If this practice were stopped, and if each mill would select as their agent one of the commission houses, and confine the sale of their product to them, we are confident the desired result would be assured.

The figures given by your correspondent as to the possible saving through direct selling unfortunately are misleading, as he has overlooked the fact that the 3 per cent. discount returns no profit to the selling agent, as he in turn must give it to the buyer. The mills would have to offer the same discount if they sold direct, either through a central selling agent or individually.

---

6. I understand that a good many Southern mills are owned by Eastern commission merchants. Are these people going to look on if such a combination is formed? It would be to their own interest to keep out of such a selling agency.

---

7. We do not handle cotton yarn, as we are strictly a cotton goods commission house, and we therefore do not feel competent to pass any opinion upon the plan for a Southern yarn selling agency, as outlined in the latter addressed to you from Charlotte, N. C., under date of October 29. The plan reads well on paper, but we doubt if it would be possible to control the buyers in quite so drastic a manner, from their point of view. And it also minimizes the power and personality of the individual in the selling organization, which count for a great deal, for in so large a selling agency the individual salesman would necessarily lose some of his hold upon the individual buyer.

Nevertheless, if the plan is carried out it will be a most interesting experiment and might accomplish the desired result of eliminating some of the abuses that undoubtedly have crept into the present method of selling cotton yarns.

---

8. We think every man should sell his own goods. This is the only way to do business if he wants to stay in business. This is and has been our style for about thirty years and this has enabled us to pay one hundred cents on the dollar, with no extensions.

---

9. As we are a very much interested party, perhaps it would be the better policy for us as commission agents not to say anything, simply go on in our usual way and leave it to the Southern mills to settle the question for themselves. We do not think that the Southern mills reason the matter out correctly. As a rule they are apt to be optimistic, and some of us think they stand in their own light.

The writer's personal experience has been that the commission men are making less today than they did ten years ago, and their expenses in selling, or endeavoring to sell their product, is very much larger. There are a large number of mills that make identically the same grade, quality and counts. A selling agency, unless they were dealing with far sighted men, would get themselves in trouble with their stockholders or with the mill agents on account of the fact that they might possibly discriminate unintentionally by sending an order for 2/20s warps to one mill and then if the market went down have the other fellow find out that his goods has not been marketed to as good advantage. It is difficult for selling houses with half a dozen mills making the same goods, to satisfy them all.

The expense of marketing the goods is growing larger every year, not only on account of the position some of the Southern mills have taken, but on account of the severe competition among so many of the commission people in the North. Ten years ago the ordinary buyer of yarn bought in larger lots and the expense of calling on them was much less than it is today. In those days we had to see them only two or three times a year and now it is necessary to have a man call on them every week so as to keep in touch with them. Where there used to be five or six large houses in the commission business, there are now six or eight large houses and twenty small ones competing. Some of the smaller houses, in order to secure the business, cut the price from a half to three-quarters of a cent, feeling that the larger houses have the advantage with the customer on account of having done business with them so many years. Because of the feeling that the larger houses had always stood up and delivered what they said they would, the small fellow will take the business on a 1 to 2 per cent. basis for himself. The Southern manufacturer does not see that this hurts everybody, but it eventually does, for the reason that it depresses the market. This man is very apt to meet other buyers and let out that he has bought 40s for such and such a price. The other fellows immediately hold out in an effort to force the market down to that figure. In other words, the cutting of the price by a small man often breaks down the whole market.

Then the speculative end is a big feature. The mills want orders and will make close prices to get immediate deliveries and get rid of carrying stock. The large speculative houses give them an order, and the mill does not know where the yarn is going. It does not make any difference whether the market goes up or down, the speculative house can get rid of that yarn to good advantage. If the market has a weakening tendency, he goes out and sells it and makes the purchaser think that he is getting good yarn at a little better price. If the market goes up he is willing to take a profit at a trifle less than what the mills want for their product at that time.

All of this adds to the expense of selling, as it forces the houses doing legitimate business to

keep higher priced men on their pay roll than they otherwise would have to, and it adds to their traveling expenses and everything else in the business.

Under the present conditions there is very little money in the commission business today, above the interest on the investment. The business house that has done a conservative and legitimate business does well to show a bank investment, although they have incurred the extra risk of business. We have known a number of mills in the South that have made very large sums of money in the manufacture of cotton yarns, but we do not know a commission house that has made more than a good living in the business. The number of people going out of business the first of the year and the number of changes that are taking place in other houses, confirm our assertion. There are lots of reforms that will be beneficial both to the commission people and to the Southern mills, but they will be a whole lot better off trading with people who are conservative and honest in their transactions, and not trying to do business direct and assume the risk of failures, warehouse and insurance charges and other incidental expenses that are bound to arise. All our insurance warehouse and drayage charges are paid by commission men.

We believe that the only direct selling agency that ever will be a success will be one with a very large number of spindles which the agency controls. Even then we do not believe the actual saving to the mills will be along the lines of a saving on the commissions, but will be along the lines of keeping one mill on one class of goods and nothing else. In other words, the cost of marketing the goods would not be greatly reduced, but the benefit would be in an increase in production.

---

10. We have read with interest the proof of letter referring to a proposed selling agency for Southern yarns. Without going into pros and cons of the matter, will say we consider the proposal without the slightest favor, both from the standpoint of the manufacturer, the selling agent and the buyer.

Seasonable Fabrics.

DRESS GOODS.

That the coming spring will be a banner dress goods season is evident from the large orders booked by domestic manufacturers and importers of wool dress goods for both early and late shipments. Several of the domestic manufacturers have withdrawn their lines, stating that they have taken orders for their entire production for the coming season. A number of mills are running all their looms on plain storm serges, endeavoring to complete the orders that they have booked. Many buyers have realized their situation and are placing orders as far ahead as the mills will accept.

The supply is short many pieces of storm serge, especially in navy, garnet and black. These colors finished the fall season very strong and continue to be in demand for the spring trade. It is evident that serges will be the leading dress goods fabrics for the coming season. The most popular seller is the 36-inch all wool serge. This grade is sold entirely out. A number of buyers have taken a 36-inch cotton warp storm serge, which they are using until they receive the all wool fabric.

The demands for imperial serge, henriettas and wool taffetas for early spring shipment has been very good this season. These fabrics will hold a very strong position in the market during the spring season. The most desirable colors are wisteria, wine, navy, tan, apricot, myrtle green and old rose.

In the fancy dress goods market the trade is demanding neat piece dyed effects such as diagonals, herring bones and satin stripes. These weaves are in demand for early spring shipment. Fancy worsted effects in medium priced fabrics in narrow stripes, are in demand. The Atlantic Mills offers a line at 62 1/2 cents a yard, 42 inches. Fig. 1 shows a neat hair line stripe from Rusch & Co. at 63 1/2 cents a yard, 42 inches wide.

Hard twisted wool voiles in the better qualities are in demand, especially for the cutting up trade.

SILKS.

Taken as a whole the fall silk trade has been very good, in fact the season is finishing stronger on the more popular fabrics than was looked for earlier in the season. Like all other dress fabrics, plain colored silks have been favored during the past season. The prospects for the coming season are that plain colored fabrics will continue in favor.

The advance order trade on silks for spring was not as large this season as

usual. This is due largely to the delay in getting the spring lines completed. There are very few changes in the spring collections at this early date, but several manufacturers say that they will add some very attractive novelties to their collections in the near future. Messalines and other soft silks continue to hold a strong position for the coming spring season.

FIG. 1.

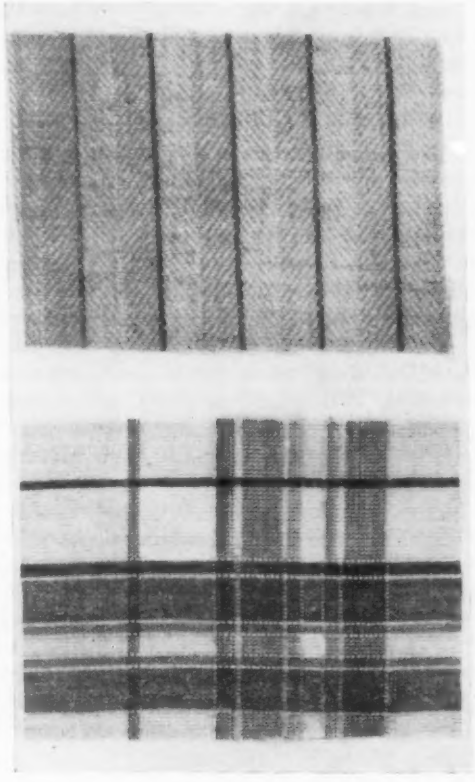


FIG. 4.

Piece dyed fancies in all of the popular weaves, such as diagonals and wide wales in qualities costing from 45 to 90 cents a yard are favored for the early spring trade. Several of the large buyers are placing orders for these weaves for late shipments, feeling that the demand will continue on all plain colored fancies throughout the entire season.

The manufacturers catering to the large advance order trade report that changeable taffetas will be in demand and will continue to gain favor as the season advances. Several large jobbers have placed orders for these changeables to be delivered during the early summer months.

In the fancy silk market neat stripe effects continue to be the most popular patterns. Shepherd checks and plaids are in demand, but most buyers are using these goods in small quantities, giving their attention to stripe effects. Fig. 2 shows a neat stripe taffeta from Samuel Eiseman & Co. at 55 cents a yard, 19 inches wide. Fig. 3 shows a stripe from Givernaud Bros. at 57 1/2 cents a yard, 19 inches.

The trade is calling for plain colored taffetas in all of the leading shades, especially in the better qualities. These plain colored taffetas were not so popular earlier in the season, but the present demand indicates that they will hold a strong position in the market.

The advance order trade for printed foulards has been very large this season. The trade are confining their selections to the more staple small patterns with navy, Copenhagen, wisterja and old rose grounds as the greatest favor.

COTTONS.

The cotton goods market has been very active for the past few weeks. Unusually heavy demands are being made for all grades of cotton piece goods, especially for 4/4 bleached and brown muslins and wide sheetings. The trade on these staples has been so active that most of the popular brands are sold ahead for four to six weeks. These unusual demands were caused by a number of buyers who did not supply their wants earlier in the season, and also by the large reorder trade.

The mill agents for several of the popular brands of muslins continue to take orders at value only, stating that their mills may be compelled to advance the prices without notice, owing to the high price of raw cotton. The jobbers are offering Fruit of the Loom 4/4 bleached muslins at 10 cents a yard from stock only. The agents are holding the goods at value and predict that the

price will be 10 1/2 cents in the near future. These conditions prevail on all lines of staples. The demand continues greater than the supply, even at today's high prices. It is the belief that high prices will prevail for some time. The manufacturers claim that the price for the finished fabrics will be based on raw cotton selling for 16 cents a pound. The buying trade predict that more

FIG. 2.

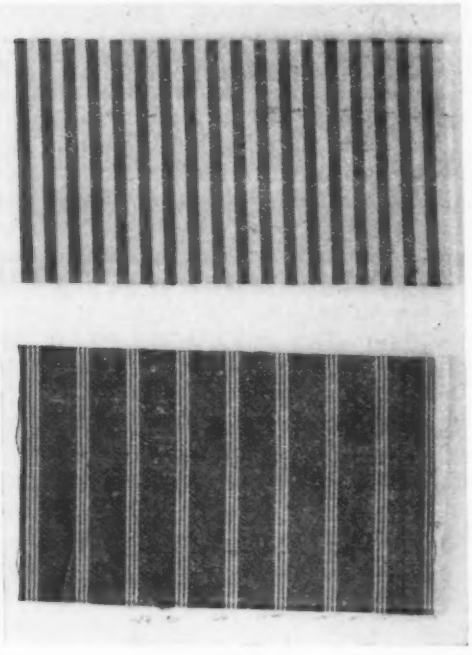


FIG. 3.

advances will mean a loss of confidence in the market.

The manufacturers of Turkish towels, bed spreads and other staple cottons, have advanced their prices about 20 per cent. during the fall season. The demand for these goods continues to be very active, especially for the popular grades. Several of the mills have withdrawn their lines from sale until some of their orders are completed.

The spring advance order trade for wash goods has been larger this season than usual. These lines were opened at about the same prices as last season. The more conservative buyers realized this and placed their orders early. Very few advances have been made on these lines except on poplins and pongees. The trade continues to call for poplins and pongees for early spring shipments in full color assortments. Plain fabrics will hold a strong position in the market during the coming season.

Dress ginghams, both imported and domestic makes, are finding a ready market. The trade is calling for these goods in large patterns as well as in the staple patterns.

Fig. 4 shows a style made by the Lorraine Manufacturing Co., to sell at 15 cents a yard.

A Cartel in the Cotton Spinning Trade.

The increase in the cost of raw cotton and the failure of the cotton yarn market to advance in proportion has led to a movement among the cotton spinners of Austria to organize a cartel for regulating the price of yarn. It is proposed to put the cartel agreement into effect as soon as signatures representing 2,000,000 of the 4,400,00 using American and Indian cotton in Austria are obtained. The plan contemplates the fixing of prices by a committee composed of members of the combine, who will have authority to allow firms to sell at lower prices when their production is ahead of their orders. Penalties are to be provided for failure to live up to the agreement. Statements of orders and stocks of yarn on hand are to be sent by each member regularly to the central office. The plans for this cartel are still in the preliminary stage, but the movement is significant of the effect that high priced cotton will have in bringing about trade agreements among cotton manufacturers.

The products of the carded woolen and worsted mills of Great Britain in 1907 were valued at $195,735,494.

The average annual value of exports in woolen and worsted tissues from the United Kingdom to the United States during the five years from 1903 to 1907, was in woolen $1,751,267, and in worsteds, $7,969,872. With the single exception of Canada, the United States is the United Kingdom's best customer.

Cotton Exchanges

From the Report of the U. S. Commissioner of Corporations.

The successful use of the future market by the cotton trade depends on the maintenance of a substantially constant margin between the price of middling cotton and the price of future contracts. The New Orleans Cotton Exchange distinctly provides that the grades other than middling shall be deliverable only on the basis of the actual commercial differences on or off middling cotton at the time of delivery—and, in the main, the normal margin between the price of current future contracts and the spot price of middling cotton has been fairly well, although by no means perfectly, maintained at New Orleans.

At New York, on the other hand, the grades other than middling are deliverable at arbitrary price differences established by a revision committee only twice a year at most, once in September and again in November. This committee is allowed virtually complete discretion in determining these arbitrary differences. Frequently the differences fixed by it have been widely at variance with the true commercial differences at the very time they were established. In other instances these arbitrary differences, although originally in accord with the true commercial differences in the spot market, have later become far out of line with these commercial differences, which fluctuate with changes in supply and demand for specific grades.

This arbitrary method of establishing contract differences at New York works great injury to dealers in exchange contracts, and especially to buyers. Since the seller has the complete option of selection, he naturally delivers those grades which, because of these erroneous differences, are most overvalued as compared with middling. This means that the purchaser will suffer an unjust loss, since when he disposes of the cotton in the spot market he can obtain only the commercial differences. Consequently, buyers of contracts seek to escape this loss, either by lowering their bids for contracts at the time of purchase, or, if they have already purchased such contracts, by selling them out. In the latter case they must sell to buyers who will similarly endeavor to protect themselves.

Either effort, therefore, results in an abnormal depression or discount of the future price in comparison with the actual or spot price of middling. For instance, in 1906-7, when the differences at New York greatly overvalued the lower grades, the price of current future contracts, instead of remaining at the normal discount of approximately 25 points, went 200 points below the spot price, and for a long period it was at a discount of more than 150 points under that price. In 1807-8 there was an equally abnormal margin between the two prices.

The principal other evils of cotton contracts are, first, the overgrading of cotton for contract delivery, and second, an unduly wide range of deliverable grades. The former evil has existed chiefly in the New York market. The effect of such overgrading is substantially the same as the overvaluation by means of false differences, namely, to produce an abnormal discount of the contract price.

The wide range of grades deliverable on contracts also tends to increase the margin between spot and future prices, but in the absence of overgrading and false differences this is a less serious matter, since the margin, though wider, should be fairly constant. Practically, owing to occasional overgrading and the difficulty of establishing differences for some grades, this wide range of deliverable grades likewise tends to produce abnormal discounts of the future price. In this connection it should be stated that both the New York and New Orleans exchanges have considerably narrowed the range of contract grades since the Bureau's investigation was commenced.

It will be seen, therefore, that the objectionable features of cotton contracts noted all have the same tendency, namely, the de-

pression of the future price as compared with the spot price. It should be clearly understood, however, that the real evils are that a false quotation is widely published as the price of a great staple, and that the buyer is forced to take the grades other than middling at false valuations. These abnormal discounts, therefore, instead of being the real evil, are, rather, a symptom of the real evil, just as a high pulse or a high temperature is a symptom of a disordered physical condition.

FALLACIES IN DEFENSE OF FIXED DIFFERENCES.

The elimination of speculative risks from the operations of the non-speculative class under a basis contract is complete, even in theory, only with respect to general changes in value as registered in the price of middling cotton, the basis grade. The secondary risks involved in the relative price changes for the other grades present a different problem. Under the commercial-difference system, properly conducted, the buyer of a contract does not suffer if he is tendered grades other than middling, since he is forced to receive these only at relative values to middling at which he can resell them in the spot market. The seller likewise does not suffer when he delivers cotton purchased at the time from a stock in the delivery market so that there is no time for a change in differences to occur.

As a matter of fact, a considerable interval usually elapses between the time when the seller gets his cotton together and the maturity of the contract. During this interval the commercial differences may so change as to result in loss to the seller. Advocates of fixed differences contend that the seller simply will not take this risk of changes in grade differences. They take the position that the contract must be a "calculable" one —that is to say, they contend that the shipper of cotton must know at the time he makes his shipment the exact price at which each grade will be deliverable. This "calculable" contract is an attempt to do away with this risk of the seller by transferring it to the buyer.

Any such transfer is wholly unjustifiable. The calculability is for the seller only, since he has the entire option of selecting grades for the delivery, and such a contract, while giving greater calculability to the seller and adding to his already great advantage, becomes exceedingly incalculable for the buyer. It is not only inequitable to the buyer, but results in the further evil of disorganization of the cotton market. The "calculable" contract proposition used in this connection is the most plausible and yet at the same time the most misleading argument advanced in support of the fixed-difference system.

There can be no doubt that if this risk could be averted for all nonspeculative interests, by throwing it exclusively upon the speculative class, this would be exceedingly desirable Such complete avoidance of speculative risks for all the different grades, however, is impracticable under the fixed-difference system employed at New York, for the simple reason that the attempt to avoid these risks by arbitrarily establishing contract differences results in disturbance of the margin between the contract price and the spot price This means, as just stated, that it disorganizes the hedging function and destroys the protection of those nonspeculative interests who desire to use the future market chiefly for the purpose of buying hedges; at times it also may work to the injury of sellers. It also, of course, results in a false quotation. In other words, it defeats the prime purposes for which an exchange is organized.

Advocates of fixed differences are really contending that the buyer should assume the risk not only of changes in middling itself. but of changes in the differences for the other grades as well. To support this contention they put forward the doctrine of *caveat emptor* (let the buyer beware). This argument overlooks the vital distinction between a basis and a specific contract. Under a specific contract the rule of *caveat emptor* properly applies because the buyer secures title to some specific thing which he can inspect before buying and which he can resell and thus protect himself against threatened loss. Under a basis cotton contract, however, the buyer does not get a specific thing, but is forced to take any one of a large num-

ber of grades which the seller may see fit to tender him. Until the actual moment of delivery he has no positive knowledge of the character of these grades. Moreover, if a revision occurs between the time he makes the contract and its maturity he can have no knowledge as to the differences which ultimately will apply. Therefore, the buyer of a basis contract has no such opportunity to inspect and "beware" as the doctrine of *caveat emptor* contemplates.

In this connection it is worth pointing out that it is a well-settled principle of law that the doctrine of *caveat emptor* is not applicable to an executory contract like the basis contracts of cotton exchanges. Instead, the rule of *caveat venditor* (let the seller beware) applies to such executory contracts.

One of the most common arguments in favor of fixed differences is that they relieve the producer of loss arising from an oversupply of certain grades by distributing such loss among operators in the future market. As a matter of fact, this is impracticable, because overvaluing differences almost invariably cause a relative depression or discount of the future price, so that producers are able to avoid risk only to the limited extent to which they may be able to sell contracts before such depression occurs. Practically such a depression of the contract price occurs long before any great amount of cotton can thus be sold.

Not only does the fixed-difference system fail to benefit the producer, but instead it actually injures him. Against the possibility of being able to sell a few surplus grades for a limited period at a false valuation, the producer eventually sells the great bulk of his crop on the basis of an unduly depressed future price. This is particularly so because of the custom of buying cotton at limits on or off, already described. Unquestionably, the loss which he thus suffers on his crop as a whole is in excess of any possible benefit which he can reap by selling a few surplus grades at false differences. Moreover, such limited benefit, as clearly shown, could be obtained by the producer only by thoroughly disorganizing the future market and causing great loss to many innocent parties.

INEQUITY OF PERMANENTLY FIXED DIFFERENCES.

The Bureau's investigation has apparently had the effect of forcing some hitherto stanch defenders of the New York system to admit its inequitable and uncommercial character. Thus, one member of the New York Cotton Exchange, who previously had defended the New York system, said:

> The arbitrary fixing of differences is in my opinion indefensible. . . . If we have our revision committee meeting as it does now, and changing differences to its idea of the relative values today and for the next few months of the different grades of cotton, there is no escape from the conclusion that the revision committee ought to meet whenever there is a change [that is, in the commercial differences], and ought to make that change.

Instead of advocating a return to commercial differences, however, this member, as well as many others, favored the adoption of absolutely permanent differences, expressed in percentages based upon the so-called "spinning values" of the various grades. This proposition was originally based on the assumption that these percentage differences should correspond to the relative percentages of waste, as found in manufacturing the various grades; that is, if low middling cotton always yielded 90 per cent. as much clean spinnable cotton as middling, then the contract value of low middling should always be 90 per cent. of that of middling; in other words, the contract difference for low middling should always be 10 per cent. off the contract price of middling.

One advantage claimed for such a system of permanent percentage differences is that it would forever do away with the danger of mistakes, or the abuse of power by revision committees, since a revision committee would, of course, no longer be needed. While avoiding this particular danger, however, such permanent "spinning value" differences are exceedingly objectionable. In the first place, they are impracticable. Investigation shows that the amounts of waste

in the different grades vary widely according to the method of handling cotton in the factory and the kinds of goods produced, so that it is exceedingly difficult to determine percentages which would be representative. The amount of waste resulting from cleaning and carding is increased because of the breakage of yarns in subsequent operations, this breakage being dependent upon the grade of the cotton, the style of machinery, the character of the goods manufactured, and other factors which cannot be readily taken account of by any committee of an exchange. A further vitally important matter is that the fiber obtained after removing waste and after cleaning is not identical for the various grades. Instead, the cleaned fiber from a bale of low middling is not as good as the cleaned fiber from a bale of middling; consequently, this proposition to establish differences on the basis of so-called spinning values is not solved simply by determining the amounts of waste in the various grades.

To meet this difficulty advocates of such permanent differences have been driven to make the suggestion that the spinning value should be calculated partly upon the basis of the selling values of the manufactured goods. The impracticability, and the impossibility as well, of any such proposition should at once be apparent. Instead of using directly the values of the raw staple as established in the spot cotton market, it is proposed to determine these values of the raw product by a cumbersome study of the values of a great variety of manufactured goods, the market price of which is influenced by a vast number of considerations which may be radically different from those affecting the raw product itself. That such a roundabout method should be seriously proposed is a very good illustration of the inconsistencies to which opponents of commercial differences are willing to go.

A fundamental objection to this proposition is that it undertakes to substitute arbitrary values for values established by supply and demand. The law of supply and demand asserts itself with as much force with respect to other grades as it does with respect to middling itself. Advocates of such differences really confuse mechanical utility with commercial value. It may be true that a bale of cotton of a given grade will always make approximately 10 per cent. more yarn than a bale of another grade, but obviously there is no such constant relationship between the market values of these grades.

Another serious objection is that permanent differences, like the "fixed" differences now employed by the New York exchange, throw an unjust burden upon buyers of contracts. As conclusively shown, the seller has no right to expect relief from the risk of changes in grade differences unless he is willing to enter into a specific contract with the buyer, at least until some system is devised which will at the same time protect the nonspeculative buyer. This argument really is a "heads I win, tails you lose" proposition; it is a plea that the seller be given a "sure thing."

Such permanent differences certainly would perpetuate the evil for which the New York Cotton Exchange has been most seriously criticised, namely, abnormal fluctuations in the discount of the future price. Advocates of such permanent differences themselves admit that since these differences, even on a percentage basis, are bound at times to be at variance with the true commercial differences, the contract price must fluctuate relatively to the middling price in order to correct this disparity between the two sets of differences; in other words, that the contract price must, more or less frequently, go to an abnormal discount. This means that both the primary functions of the exchange will be perverted, namely, the forecasting of prices and hedging. A future price which may be distorted simply as a result of artificial differences obviously ceases to be a true reflection of the market value of middling cotton, while, as repeatedly shown, such fluctuations in the future price largely destroy the usefulness of the market for hedging purposes. It is difficult to see how the adoption of a system so directly in conflict with the two fundamental purposes of an exchange can be justified.

NECESSITY OF MORE FREQUENT REVISIONS AT NEW YORK.

It should be apparent, therefore, that it is incumbent upon the New York Cotton Exchange to provide for more frequent revisions of contract differences. In Part I of this report the Bureau reached the conclusion that revisions should be held at least once a month. Many members of the exchange who recognize the evils of the present system are disposed to favor only three or four revisions a year. While every additional revision, if properly conducted, would be an improvement, it is reasonably certain that revisions only three or four times a year would not prevent injustice to the buyer of contracts and consequent fluctuations in the discount of the future price.

Another change in the New York method imperatively demanded is the adoption of a rule which shall specifically direct revision committees to establish contract differences on the basis of the true commercial differences. The present method of leaving virtually complete discretion to revision committees is one of the most objectionable features of the New York system.

NECESSITY THAT CONTRACT REPRESENT COTTON AT ALL TIMES.

In brief, the Bureau's contention is that the rules of the New York Cotton Exchange should be so framed that its contract will at all times faithfully represent cotton, and particularly middling cotton, the basis grade. Defenders of the New York system, in contending that it does not injure the producer, have argued that the future market has no more effect upon the price of cotton than the thermometer has upon the temperature. The fallacy of this contention has been clearly exposed. It is worth pointing out, however, that even if the general contention were true, a thermometer which repeatedly failed to record the temperature faithfully would be worthless. Indeed, a future contract which persistently fails to reflect the changes in middling cotton is not only worthless, but much worse than worthless. If it were not used, it would be merely worthless. But this thermometer is in constant use through the system of buying limits and the sales of thousands of producers are affected by the error. A fairer comparison would be with the steam gauge of a boiler, the failure of which to faithfully record the pressure clearly might result in serious disaster.

WORSE THAN A BUCKET SHOP.

When the future contract ceases faithfully to represent cotton, an exchange becomes little better than a bucket shop. In some respects it becomes worse than a bucket shop. No one claims that a bucket shop influences the price of cotton. Spinners and cotton merchants do not consult bucket shop quotations. They do, however, constantly consult the quotations of the New York Cotton Exchange, with a view to basing their forward commitments in cotton or cotton goods upon them.

One of the most serious complaints against the New York Cotton Exchange comes from spinners and merchants doing business in foreign countries, on the ground that the misleading quotations promulgated by the New York Cotton Exchange have led to endless friction in the conduct of the spot cotton trade, as well as to serious loss. This objection is well illustrated by the following excerpt from resolutions adopted by the American Cotton Manufacturers' Association in Richmond in May, 1908:

> It should be clearly borne in mind that the great mass of buyers of goods, particularly buyers for export, base their ideas of the value of goods upon contract quotations on the New York exchange, and that these buyers are wholly misled, therefore, as to the cost of the raw material in the manufacture. . . . Under such circumstances erroneous market quotations become a curse to the manufacturer and to the producer, and we feel that the New York exchange must rectify its contract so as to make the contract responsive to the spot condition.

Some members of the New York Cotton Exchange, it is true, have gone so far as to insist that there is no necessary relationship between prices of cotton and prices of future contracts. They argue that "cotton and contracts are divorced," and that there is no sound reason why a parity should be maintained between them. It is probable that any such extreme opinions are supported by only a few members of the exchange. Such a position is an exceedingly dangerous one for members of an exchange to assume.

Welfare Work in Japanese Mills.

By the Kanegafuchi Spinning Co., Ltd., Japan.

It has been the constant aim of the Kanegafuchi Spinning Company to promote the welfare and interests of our operatives, and we have adopted the "Mutual Relief System" recognized in Europe and America as the most efficient method for the relief of the operatives in times of adversity. We have also instituted "Welfare Work" for the social well being of our operatives, which is controlled by the management. The work of each branch of these organizations is enumerated below and will show that almost every necessity is provided for.

THE KANEGAFUCHI SPINNING MILL.

EDUCATIONAL WORK.

Operatives' School. The aim of this school is to give a general theoretical and practical knowledge concerning the work of a spinning mill to a number of selected male operatives, who will eventually form an important active factor in the work of our mills. Nearly 300 graduates of the school are already taking active part in our mills. The tuition, board and lodging are free, and the students are placed under a strict semi-military discipline.

School for Female Operatives. This school has been established for the purpose of giving the female operatives a good elementary education as well as a general knowledge of household training. The young girls coming mostly from rural districts have had very little opportunity for an education, and therefore this school has proved a great boon.

Kindergarten. Young children of our operatives are taken care of by special nurses at our kindergarten, which also serves to give the mothers, who work in the mill, more chance for rest. The kindergarten is liberally equipped and is considered to be one of the best in the country.

Publication of Periodicals. Two semimonthly periodicals are published by our company; one is for the benefit of the male operatives, and the other is for the female operatives. The general purposes of these publications are: (1) to make the operatives well acquainted with the working and progress of the mill; (2) to create an interest in the work, and furnish some recreative reading matter; (3) to give details of the mechanism and working of the latest machinery; (4) to improve the character of the operatives by good reading matter. Suggestions for improvementt are encouraged and published through these columns. These two periodicals serve as organs through which the mutual understanding between the company and the operatives are adequately maintained. It is gratifying to the management that the purposes of these publications are being carried out in the original spirit. These periodicals are supplied free to every operative or employe, and are rendering a great service for the mutual benefit of the company as well as the operatives and employes.

Lectures and Recitations. In addition to the elementary education and household training given at the school for female operatives, we recognize the importance of cultivating the mental faculty of the female operatives, and for this purpose lectures and recitations by eminent lecturers and speakers are given in the main hall of the dormitory in the mornings of the shift days (four times a month), the result of which is quite satisfactory in improving the operatives' character.

VIEW OF THE TENEMENTS.

Female Etiquette. Instructions peculiar to female etiquette in this country (Japan) are also given by competent tutors or tutoresses, which are very popular with the female operatives.

ARRANGEMENTS FOR THE SICK, THE INJURED AND THE DECEASED.

Relief by the "Kyosai Kumiai." An operative suffering from disease is entitled

to receive help according to the Articles of Association in the form of pecuniary assistance, and to receive medical attendance in the company's infirmary free of charge. When injured he is entitled to receive medical treatment in the infirmary free of charge, and if incapacitated for a time or for life from the injury received during the discharge of his duty full wages will be given him for such period. The bereaved family of a deceased operative is taken care of by the "Kyosai Kumiai," which provide the daily necessaries. During confinement the female operative receives full wages and gratuitous medical treatment until she is able to resume her work.

Relief by the Company. In cooperation with the work of the "Kyosai Kumiai," the company has made special arrangements for the relief of the sick, injured and deceased, which are applicable to those cases not provided for by the Articles of Association of the "Kyosai Kumiai." Besides, special provisions have been arranged by the company for the following cases:

Allowances for the invalid operatives going home.

Allowances for the bereaved family of the deceased.

Allowances for the visitors to the sick operatives.

Allowances for the injured.

These allowances are so liberal that in most cases all the expenses are practically borne by the company, and every comfort is provided for these cases. In special cases not covered by the above provisions, the Committee of Relief is fully authorized to meet any emergency.

THE DINING HALL, KANEGAFUCHI SPINNING MILLS. SPECIAL DECORATION AT A RECREATIVE GATHERING.

ARRANGEMENTS IN CONNECTION WITH FOOD, CLOTHING AND DWELLINGS.

Dormitories for the Female Operatives. As the majority of the young female operatives come from the country districts far away from the mills, the company give them all home comforts, so as not only to make them feel quite at home in working in the mill, but also to set their parents at ease in leaving them to our care. Commodious dormitories have been erected in the mill premises supervised by competent officials with female assistants, whose duty it is to look after the interests of the girl operatives, attending to their needs with kindness and ever ready to serve as paternal advisers to them.

The apartments in the dormitories are provided with lockers for the operatives' belongings and furnished with clean bedding, etc. Everything is kept strictly in order so as to assure comfort and the sanitary arrangements are kept scrupulously clean. A special room nicely furnished is set apart for the operatives to receive their visitors from home, who are allowed to stay at the dormitory for a few days free. Correspondence is encouraged so as to keep the operatives and their homes in constant communication. Letter paper, envelopes, post cards, postage stamps, etc., are furnished free of charge. Bath rooms with necessary equipments are open in the morning and evening. A special toilet room nicely furnished is attached to the bath rooms.

The Dressing Room. In this room the female operative is required to change her dress for the work dress. By this arrangement the cleanliness of the operative's dress is assured and the attendants of the room are enabled to collect the soiled clothes, which are sent to the laundries. A special rest room is provided for operatives slightly indisposed, who require a few days' rest. The juvenile female operatives and new recruits are taken care of in separate apartments by female overseers specially appointed to look after their interests until they are used to the life of the factory dormitory.

Dormitories for Male Operatives. These dormitories are built specially for single male operatives, with clean apartments, library, recreation room, dressing room, etc.

THE KINDERGARTEN, KANEGAFUCHI SPINNING MILLS.

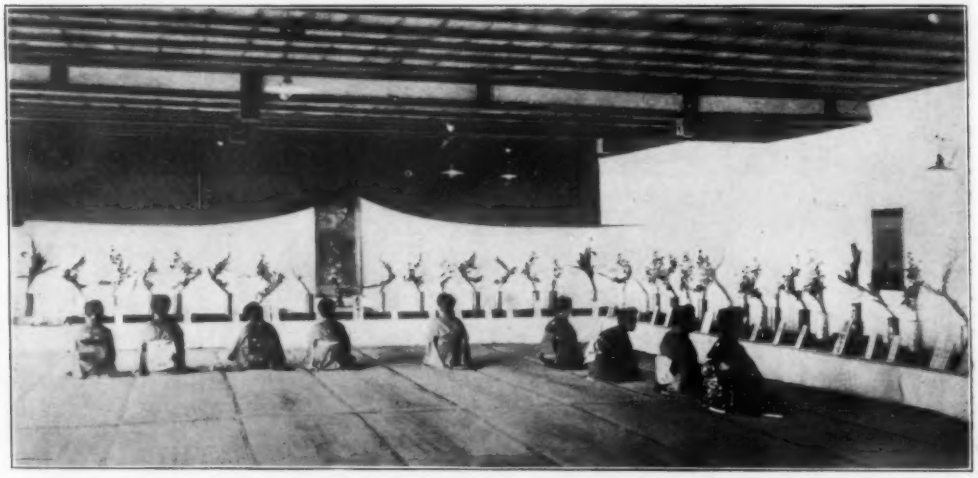
Tenements. These tenement houses are provided for operatives with families, and similar facilities as in the dormitories are also accorded to them. Bath rooms, barber shop, and the retail shop of the Cooperative Society furnish nearly all daily requirements of the operatives living in the tenements. The rent is very low, being about one-third of the ordinary house rent. There is a tenement office with competent officers on the premises and attends to all sorts of private needs.

The Cooking Quarters. These quarters are conducted by the company, and substan-

tial meals are served to the operatives. The charge for meals is considerably below the cost price of the materials, the company doing the cooking and furnishing free. The cost of these arrangements amount to thousands of yen per month, but the company is convinced that the cost of maintaining all these welfare arrangements is more than made up by the increased efficiency of the operatives.

nished with the most up-to-date equipments, and can be well compared with any first-class hospital in the country. Experienced physicians and nurses are always on duty and attend to the sick and injured free of charge. Every conceivable comfort is provided for the patients.

The Contagious Diseases Hospital and Bacteriological Laboratory. These have been erected on the most approved plans,



DISPLAY OF FLOWERS BY THE FEMALE OPERATIVES IN THE KANEGAFUCHI SPINNING MILLS.

Offices for the Delivery of Rice and Sundries. These offices have been instituted for the convenience of the operatives living in the dormitories, employes, and others. Dry goods, toilet articles, fruits, cakes, sweets and other sundries of daily requirement can be produced at first cost at these offices.

The Cooperative Society. This society has been formed specially for the benefit of the operatives living in the tenements, and is based principally on a similar system prevalent in Western countries. It supplies the operatives with all sorts of articles of daily need.

SANITARY ARRANGEMENTS.

The Infirmaries. The factory infirmary is a model of compact efficiency, including a consultation room, an operating room, a rest room, a dispensary, etc., which are furwith the most up-to-date equipments, and have met with very favorable criticism.

Arrangements for Giving Patients the Benefit of a Change of Air. In the summer season a change of air is recommended by the physician to a number of patients. In order to meet this requirement, these particular patients are sent to some approved watering resorts under the supervision of a physician and nurses at the company's expense.

Laundries. In one of these laundries, several laundry men are engaged by the company to wash the operatives' work dresses, while in the other laundries washing materials are supplied free to the operatives, who are requested to wash their clothes, underwear, etc., as frequently as possible.

Sanitoria. The company has in contem-

plation three commodious and well-equipped sanitoria at some seaside resorts for the benefit of operatives, who require a long rest for recuperation. The company has decided to erect one of the sanitoria at Takasago, a pleasant and salubrious seaside resort, and a sum of yen 30,000 has been set apart by the company towards the cost of construction of the building, and necessary arrangements are well under way in this direction.

THE RECREATION HALL FOR THE OPERATIVES OF THE KANEGAFUCHI SPINNING MILLS.

ARRANGEMENTS FOR THE RECREATION AND COMFORT OF THE OPERATIVES.

Recreation Halls. Yen 130,000 has been expended on the construction of recreation halls on the premises of each mill under the control of the company. Each of these halls is provided with all the equipments of a regular theatre, with stage, auditorium, etc. An open stage is provided in the front of the hall, where a semi-open air performance can be given in warm seasons. On every shift day or national holiday, theatrical performances, cinematograph exhibitions, ballad-dramas, lectures, recitations and the like are given for the recreation and amusement of the operatives.

Holiday Gatherings. On the principal national holidays, great gatherings of the operatives are held in the recreation ground, in which athletic exercises and sports by the operatives figure largely, and many amusing performances by professionals are also given. Special refreshment rooms are open free to all the operatives, employes, and their families, who are admitted free on these special occasions.

Committee of Welfare. This committee is composed of the principal officers of the company, whose duty it is to investigate how best the company can look after the welfare of the operatives and employes, and give them the best possible comfort and recreation. The fund for the promotion of welfare of the operatives now amounts to over yen 217,070 and is increasing each year.

SUPPORT FOR THE CHILDREN OF THE OPERATIVES.

Pecuniary Assistance for Bringing up the Operatives' Infants. Our welfare work is also extended to the young members of the families of the operatives, and liberal pecuniary assistance is given for infants under two years of age.

Nurseries. Children above two years old are taken care of at the nursery by competent nurses. With this nursery taking

charge of the children, the female operatives with children are enabled to attend to their work unemcumbered.

ANNUITY SYSTEM.

Annuity for long service is given to the male operatives who have served for 10 years and to the female operatives who have served for 5 years. For the male operatives having served for 15 years and the female for 10 years, the company gives them annuity for another 15 years even after leaving the mills. After 3 years of service, the operatives are entitled to receive a special bonus. Special annuities are provided for operatives incapacitated while in the performance of their duty, from disease, or on account of old age, etc.

SAVINGS AND REMITTANCES TO FAMILIES.

The company allows 10 per cent. interest on the deposits of savings by the operatives, but as the object of allowing such a liberal interest is to encourage savings by the operatives, they are not permitted to draw the money out under ordinary circumstances unless there is urgent necessity for doing so. If the operatives wish to remit a part of their savings to their homes, the company gladly complies with their wishes and remits the sum required. The savings deposited by the operatives now amount to nearly yen 160,000. Small sums are received and can be withdrawn at any time, but no interest is allowed.

RETAIL SHOP OF THE COOPERATIVE SOCIETY.

COMMUNICATION OF THE COMPANY WITH THE OPERATIVES' FAMILIES.

As the majority of female operatives residing in the dormitories are from rural districts, we make a special effort to keep them in constant communication with their homes, as mentioned elsewhere. The company also makes it a point from time to time to send a representative to their parents informing them as to the welfare of their children. As to those operatives coming to the mill from home every day, several clerks in charge are frequently sent out to inquire into the condition of their homes; cases of adversity are reported at once to the employment bureau,

which takes immediate steps to give help under the liberal provisions enumerated above.

BOX FOR SUGGESTIONS.

Suggestions for the improvements of machines and methods, for the reduction of factory and office expenses and for general improvements are asked of all operatives and employes. Boxes for suggestions are scattered throughout the mills. Prizes and medals are awarded to those making valuable suggestions.

The foregoing account will suffice to give a general idea of the constant effort on the part of the company to promote the interests and happiness of the operatives and employes, and for which no expense or effort is spared. Under these liberal arrangements, the employes and operatives are in a position to enjoy their recreation after the day's toil, and they are also protected from misfortunes such as disease and accident. When they get old and are no longer capable of work, they will be enabled to spend the rest of their life on a liberal pension. It is quite natural that these sympathetic and family-like arrangements provided for them cannot fail to appeal to their conscience, increasing their devotion to the company to something far above the ordinary pecuniary relations. Their gratification manifests itself in strenuous and faithful work, with which they strive to serve the company. It is a source of satisfaction to the management that we have been enabled to accomplish something approaching the ideal of capital and labor meeting on common ground where they may work together in harmony for their common good.

THE INFIRMARY, KANEGAFUCHI SPINNING MILLS.

From being at one time little more than an insignificant village, Bradford is now the largest wool center in the world. In 1850 the imported wool amounted to 93,000,000 pounds, valued at $15,816,125, while in 1907 the quantity imported amounted to 488,000,000 pounds, valued at $107,063,000.

Consul W. P. Atwell, of Ghent, furnishes the following rates of daily wages paid to a group of 613,000 workers, men and women, in various industries in Belgium: Earning less than 38 cents, 170,000; earning from 38 to 57 cents, 172,000; earning from 57 to 77 cents, 169,000; earning over 77 cents, 102,000.

CORRESPONDENCE AND NOTES

Upon Textile Topics At Home and Abroad.

SPINNING FRAME BUILDERS.

BY B. M. PARKER.

Three different kinds of builders are used on spinning frames: the warp builder, the filling builder, and the combination builder, suitable for either warp or filling. In all builders of whatever make the principles employed and the results obtained are the same, though the mechanical details vary considerably. We have taken the Fales and Jenks spinning frame for our description of the mechanism. In the warp wind the ring rail is traversed from the lowest to the highest point on the bobbin. This distance, the length of the traverse, varies with the size of the yarn being spun. This traverse is gradually shortened and is at its shortest when the bobbn is full, giving a tapered end to the bobbins. Fig. 1 shows a warp bobbin when filled with yarn, A B representing the longest traverse, or the length of the first layer of yarn put on the bobbin; C D is the shortest traverse of the rail, or the length of the last layer of yarn put on the bobbin.

Fig. 2 shows the warp builder. It consists of an arm, A, pivoted at G. This arm carries a worm shaft, S, on which is a worm, W, and ratchet wheel, R. Working in the notches of this ratchet wheel is a pawl, P. The weight of this pawl is counterbalanced by the small weight, E, which acts to carry the pawl up after it has been pushed down by the pawl finger. Gearing into the worm is a rack, D, which works in a suitable slide carrying the hook, H. A small roller is carried in a stand on the arm. The cam, C, gives motion to the builder by contact with this roller, the latter being kept up against the face of the cam by suitable weights, which exert a pulling force in the opposite direction to that caused by the action of the cam. From the hook, H, by suitable connections any motion given to the builder arm is transmitted to the ring rail, so, as the cam revolves the builder is moved a certain distance in an up and down direction, which is transmitted direct to the rail. As the traverse of the rail must be decreased gradually till the bobbin is full, some means must be provided to do this.

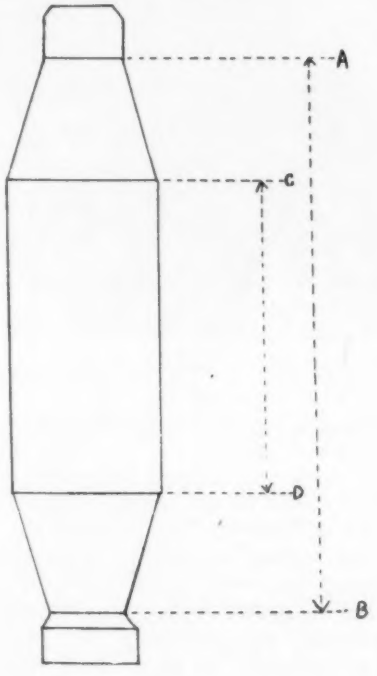


FIG. 1.

When the builder comes up the pawl is acted upon by a small finger, fixed on the frame of the machine, which causes the ratchet to turn a short distance. The ratchet being on the worm shaft with the worm gives the same motion to the latter. As the worm moves it slides the rack back-

ward toward the fulcrum or pivoted point of the builder arm and thus shortens the amount of movement given to the hook by the cam and hence the movement of the rail. The pawl is made to move the ratchet for

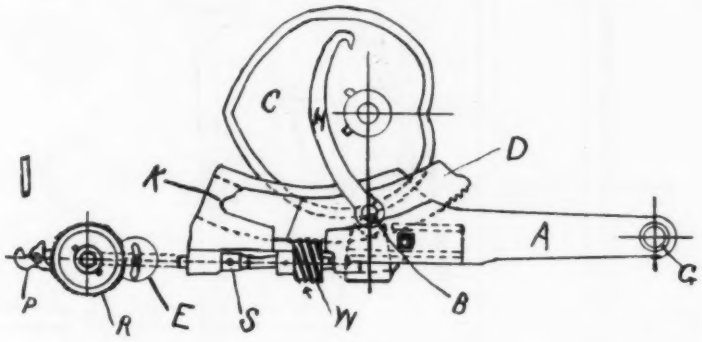


FIG. 2.

each up and down traverse of the rail, moving the rack a little each time and giving a gradual shortening of the pawl traverse till the bobbin is full. This causes the taper on the ends of the bobbin. The finger that works the pawl is adjustable to give a greater or less motion to the rail and hence a greater or less taper to the bobbin. The taper should be enough to keep the yarn from tangling at the ends of the bobbin and no more, for any further increase in the taper does no good and prevents a full amount of yarn being put on the bobbin, necessitating frequent doffing.

At the completion of the set the rack is wound out towards the front till the pivot in the rack, to which the hook is attached, hits the slide at K. This gives the full traverse to the rail and the connection from hook to rail are so adjusted that when the rack is in this position the required traverse to the rail is obtained and no more. The cam actuating the builder is what is known as a heart cam and gives an up and down motion to the ring rail in the same length of time and at the same speed at top and bottom of the traverse.

In running filling yarn the traverse of the rail is shorter than for warp yarns, as shown by the line A B in Fig. 3. The length of the traverse remains the same from beginning to end of a set, but the whole traverse is gradually raised till the bobbin is filled. This is on account of the fact that yarn on a warp bobbin will not pull off when in a shuttle.

Fig. 4 shows the filling builder. The cam, C, is three-lobed so each revolution of the cam will give three complete traverses to the ring rail. The cam can be set on the shaft so as to make either the up or the down

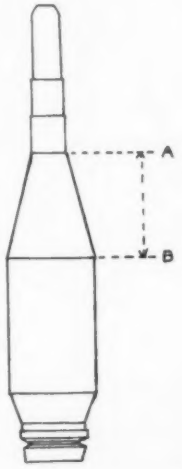


FIG. 3.

motion of the rail the slowest, the rise and fall of the cam surface not being the same, about 3 to 1. It is generally considered best to have the down motion the slowest as the yarn seems to draw off the bobbin better when this is the case. The object of having

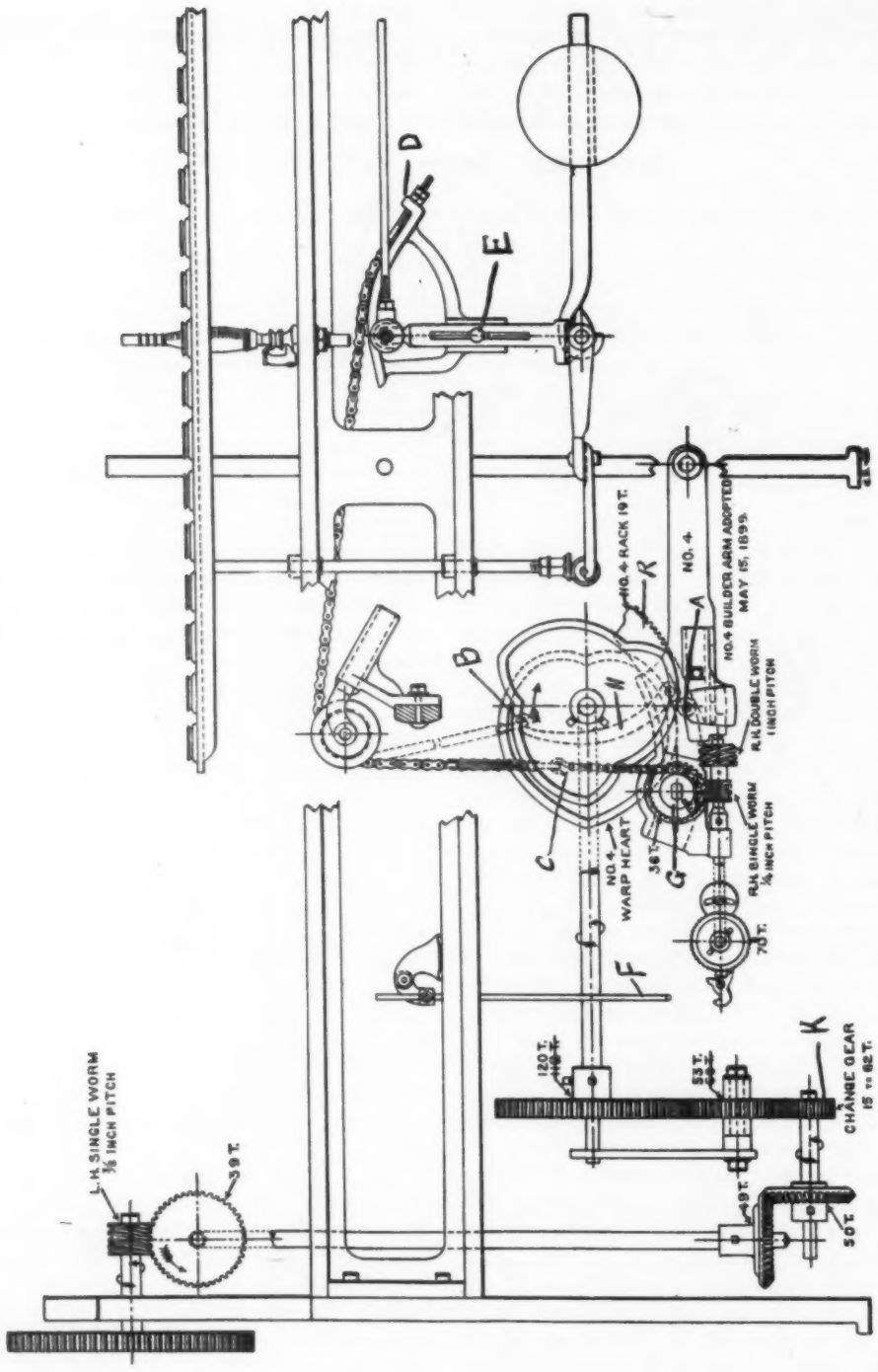


FIG. 5. SPINNING FRAME MOTION. (FALES & JENES SPINNING FRAME.)

the traverse motion faster at one time than another is that the yarn on the fast traverse will cross the coils on the slow traverse, the former being the more open, and thus bind the yarn together, giving a firmer, more compact bobbin and one that is not likely to tangle when being pulled off the bobbin while in the loom shuttle.

The cam gives the ring rail its up and down motion and the connections to the ring rail can be adjusted to give the required taper to the filling bobbin, or in other words, the length of the traverse. As we know, this traverse must be gradually raised so as to fill the entire bobbin. On the worm shaft is a worm, W, gearing into a worm gear, G. This gear carries a drum to which is attached a chain, H, the other end terminating in a hook, which connects with a chain, this latter chain by suitable connections being connected to the ring rail. As the builder cam moves up the pawl is acted upon by a finger, which turns the ratchet wheel. This turns the worm and causes it to unwind the chain from around the drum by turning the gear, G. As the chain is let out the ring rail rises, the connections being arranged to give this result.

When the bobbins are filled the ratchet is turned so as to wind the chain back on the drum, thus lowering the ring rail to the starting point. When winding up the chain the gear, G, automatically stops at the same point each time. When the frame is running, the gradual letting out of this chain raises the rail, and the action of the pawl on the ratchet is so adjusted as to give a bobbin of the correct size and shape. The more

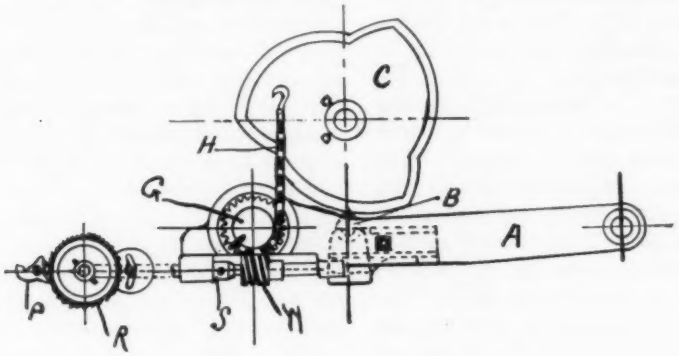


FIG. 4.

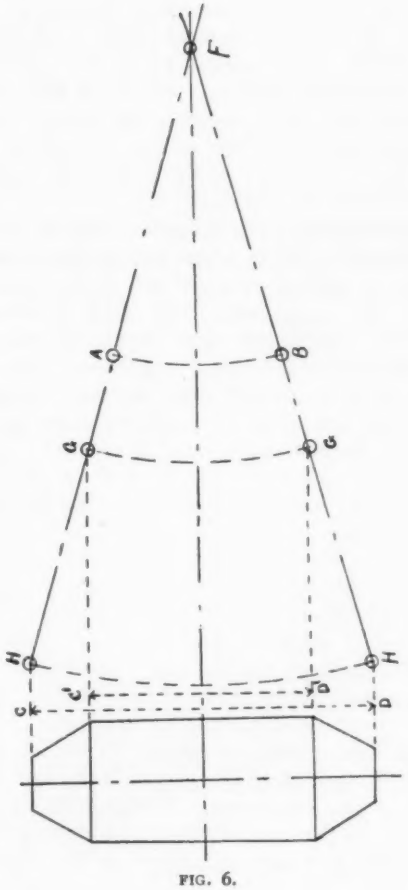


FIG. 6.

movement given to the ratchet the smaller will be the bobbin and vice versa. This enables the bobbin to be made the full size allowable by the size of the ring used on the rail. The finger actuating the pawl can be changed easily for this purpose.

Fig. 5 shows a combination builder together with a side view of a spinning frame and the connections from builder to ring rail. All who are at all familiar with the spinning frame will readily see what is meant to be shown. The connection for warp wind is shown in dotted lines, the connection shown in heavy lines being for filling. The arm in construction is similar to the warp and filling builder arms. It carries two buckets for the cam roll, one on each side under the warp and filling cams, these two cams being in working position on the cam shaft. The worm shaft carries two worms as shown and the arm carries a slide for the warp rack and place for the chain and worm gear when they are in use. The connections now are similar to the filling connections with a filling builder and all the actions are the same.

In changing from filling to warp wind the small roller, A, is taken out of the bracket under the filling cam and put in the bracket under the warp cam. The chain is disconnected at the point, C; the stud carrying the worm gear and this short chain is taken out and the rack for the warp builder is slipped into the slide and geared with the other worm; the hook is connected with the chain at A, then the finger is adjusted to give the proper amount of movement to the ratchet. This change can be made in a few minutes. The height of the traverse on the bobbins can be changed by the adjustment allowed at D, in the length of the chain; shortening the chain lowers the traverse and vice versa.

The length of the traverse can be changed by the adjustment allowed at E. The segment to which the chain is attached is held to the lever arm by a nut which works in a slide. Lowering this segment lengthens the traverse and vice versa. The gear, K, in the gearing to the cam shaft can be changed so as to give a slower or a faster motion to the ring rail. This is for the purpose of giving a change to the speed of the traverse when making decided changes in the size of the yarn being spun.

The length of the taper at the top and bottom of the bobbin can be changed by raising or lowering the fulcrum of the builder arm. This may be understood by a glance at Fig. 6. The builder is set for the same length of taper at both top and bottom of the bobbin. The pivotal point of the builder arm or culcrum is shown at F. The throw of the cam is represented by the distance A B. At the beginning of the set, when the rack is wound out and the rail is traversing the greatest distance, the hook is shown at H, and the length of the traverse is shown by the line C D. But as the bobbin fills the point, H, is gradually moved and approaches F, till it is at G, when the bobbin is full, giving the shortest traverse to the rail as shown by C′ D′. The difference between C D and C′ D′ is equally divided between the top and bottom of the bobbin. The bobbin is usually run with a little more taper at the top than at the bottom and this can be accomplished by lowering the point, F. This is because in removing the bobbin in piecing up the ends, there is less danger of tangling the yarn if there is a long taper at the top.

Handloom Language.

Editor Textile World Record:

I read that the Cheshire (England) handloom weavers in former times used to chant "Addle and tak' it. Addle and tak' it" when throwing the shuttle in the early part of the week. At the end of the week they sang "Addle-n'-tak' it, Addle-'n-tak' it" as fast as the words could be got out of the mouth. Yorkshire handloomers sang "Plen-ty of time yet. Plen-ty of time yet" on Mondays, but "A day t' lat'. A day t' lat'" on Fridays. Do you know what these words mean? Henry (1128).

Of course singing and whistling over manual tasks are still common. I do not know how common these chants ever were, but can reply that "addle" means "earn." The North of England operative will tell you, "Ah niver did addle aboon five and twenty bob i' t' wick." A bob is a shilling. "T'lat" is the West Yorkshire for "too late" and the opposite of "ower sooin" (too early). Wessex.

ENGLISH NOTES.

(By Our Special Correspondent.)

A Conservative victory is not the likeliest outcome of the general election, but the possibility is near enough to cause all England to concern itself with its own tariff questions. That victory would mean a tariff reform budget this year, with taxes on grains and meats and 10 to 15 per cent. on imported manufactures. Textile opinion on the merits of such a change in policy is divided. The silk, carpet and Scotch tweed men are generally protectionist and so are some of the makers of fine worsteds and the principal manufacturers in the mohair dress goods line. With isolated exceptions, cotton manufacturers are free traders down to their boots, and free traders predominate in the ordinary worsted and low woolen industries. some of the woolen dealers and top makers are protectionist enough, but none of them cares to contemplate a tax on wool, although some show of favor to colonial wool seems essential to a scheme of imperial preference. It may seem curious to Americans that manufacturers are among the leaders on either side.

* * *

A great deal of newspaper space has been devoted to showing what protection would do to the Lancashire cotton industry. It would cripple the trade, says C. W. Macara, who, calculating on a 5 per cent. increase in mill materials, adds that an 80,000 spindle spinning mill would be made $19,000 dearer to build and be burdened with extra expenses of $3,000 a year. Others point out that Lancashire has the home market absolutely, except for $12,000,000 imported cloth and yarn, and supplies 88 per cent. of all the cottons consumed in the British Empire. Their point is that Lancashire has nothing adequate to gain from risking its $335,000,000 worth of exports to countries outside the Empire. Shall we not have to tax raw cotton ourselves, inquires the free-trader, in order to show preference to colonial grown staple? No, answers the tariff-reformer. You can encourage colonial cotton by means of a bounty. To this promise of subsidies A. J. Balfour, conservative leader and unwilling tariff-reformer, has lent his assent publicly.

* * *

Free-traders dislike bounties, at any rate when they are called by that name. They are not averse, however, from receiving State assistance. The British Cotton Growing Association is subsidised by colonial governments to the amount of $37,500 a year and has a tentative promise of $50,000 a year for five years from the Imperial Government conditional upon the private subscription of $750,000 in the next few months. The Association cheerfully admits its indebtedness to the Government in other ways. Thus the Northern Nigerian railroad was built by the Government, primarily in order to allow cotton to be conveyed to the coast. The Association is non-political and its chairman deprecates use of its name in catching votes. Practical cotton men point out that money will not make Africa grow cotton of the American sort. African cotton is African cotton even when raised from American seed and betrays different characteristics. American-grown is the kind that Oldham at present wants. Further it is observed that without bounties India produces 5 1/2 million bales of cotton, as much as America herself did 35 years ago. Up to the moment nobody has had the hardihood to suggest the presentation of a bounty on colonial grown wool.

* * *

All in the expected course the Master Spinners' Federation has decided to continue the short-time policy until the end of February. That is to say, the mills using American cotton will remain closed on Saturdays and Mondays as they have done since last July. The vote shows that owners of 92 per cent. of the spindles are in favor of such unanimity is evidence enough of the sorry plight of Lancashire despite five months of short time. The curtailment means a loss in wages of some $400,000 a month and eight months of this kind of thing mean three million dollars' lost to operatives.

Fine Spinners' Ltd., the great consumer of Egyptian and Sea Island cotton, distributes only 3 per cent. as its interim dividend on the first half of the fiscal year. The rate may be dictated either by low earnings already or by fears of low ones in the second six months. The interim dividends were 6, 8 and 6 per cent. respectively in the last three half years, and this is not the only sign of indifferent business in Egyptian qualities. There is a cry for curtailing hours in that trade and in default of common agreement certain Egyptian mills are already shutting for one or two weeks at a time.

* * *

Looms in Lancashire feel the pinch of prices no less than spindles. Burnley is working only by daylight. Nelson, Colne and Accrington have hundreds of standing looms and Blackburn, the largest weaving town and with the greatest textile population in England, is said to have 12,000 looms at rest. In face of this and the adverse margins there is no temptation for Lancashire spinners to break their word as to short time.

This distress in the sister county does not prevent Yorkshire from enjoying something like a boom. The heavy woolen district is back at its night and day work. Bradford's complaint is that it cannot get enough weavers. Huddersfield worsted men, although busy, are glum over prices for yarn, which are not compensated for by a rise in cloth.

* * *

Neither for this winter nor the coming spring have dress goods' manufacturers produced anything of novelty either in color or design. Public taste is for the present stagnant except for the favor shown to the knit goods man. Knitted skirts in imitation of hand knitting, although not yet popular, are heard of for outdoor use. Knitted "golfers" and knitted Norfolk jackets of one length or another are very much in evidence and their vogue is not done. Weavers of dress goods are busy and have not yet begun to resent the intrusion into their domain. It took them a long time to understand the bearings of a former and a farther-reaching change. But every dress goods man now knows that there is practically no winter season in his line because women change their knitted underwear instead of their woven outer wear as formerly. However, there is no proof that the fashion for knitted coats and dresses will be as long lived as the fashion which drove out flannels. The present change may last no longer than that for knitted Tam o' Shanters for girls or than that of cardigan jackets for men, which was eventually killed by the deluge of rubbish that came into the market. The knitting trade has the assistance of a good run on fleecy waistcoats, principally in green and stripes, and a much napped stockinette is being used for overcoat linings.

* * *

Controversies over tariff matters have induced various of our manufacturers to give details from mill books. J. J. Oddy, M. P., of the Bradford mohair and dress goods house, J. Oddy, Jr., discloses the wage bills for his several departments. He uses the figures to support his plea for the exclusion of foreign piece goods and I give them for any value they may have in settling American discussions. The firm buys wool raw and sells it woven.

Fifteen persons employed in wool sorting are paid $5,250 per annum. Twenty-six engaged in combing and washing get $5,375. Spinning hands numbering 137 receive $16,250. The weaving department with 275 workers pays $63,775 in wages. There are 473 in the mill and the total sum of wages is $96,900; so that processes subsequent to spinning employ more than half the entire force and account for 66 per cent. of the wages. The figures do not amount to a good argument in favor of heavy duties on wool tops and yarn. They show, however, which process adds the labor value.

* * *

A manufacturer in a similar class of trade, W. H. Mitchell, of W. Fison & Co., Ltd., gave particulars some time ago showing what the wage element was in wool or mo-

haid goods at their different stages. From his records it appears that the item is 6.8 per cent. in tops, 13.7 per cent. in yarn and 30 per cent. in cloth. It must be allowed that Fisons use a good quality of stuff. With cheaper materials the factor of wages would be relatively higher.

* * *

Like most woolen firms in the line, John Broadbent & Sons, of Huddersfield, find grease recovery from the suds of piece-scouring a highly lucrative department. They scour 200 pieces a week with a $2,750 plant and produce about 50 tons a year of black oil. The earnings of the plant last year were 32 per cent. on capital and were 44 per cent. in three recent months. Alderman Broadbent thus apportions the costs of working a $2,500 plant in Yorkshire:

Material (acid, bags, etc.) ...	$500
Labor	325
Depreciations, 10 per cent. ..	250
	$1,075

Cost of power is omitted as this should be more than balanced by the value of the solid residuum which has been valued by a different manufacturer at half the value of coal for use as fuel. Suppose the yield of oil to be 50 tons and the price realized for it $40 a ton, there is a large profit on the annual operation.

There is no reason to doubt this experience, but worsted manufacturers need not expect such results from their piece washing. Even from wool washing the profits are uncertain, being contingent upon the greasiness of the wool, the quantity of soap used, the market price of the black oil. When the latter fetches $60 a ton, as it sometimes does, the scourer of crossbred does reasonably well out of the recovery.

* * *

Reports received in Bradford point to a revival of the fashion for cloth shoe uppers in America and Canada. Patterns of worsted lastings in fine corkscrew and Venetian weaves, chiefly in black and blue and carefully waterproofed, are being sent out. There are few signs of a similar change in our own market where cloth for boots is not very popular, but prices of calf leathers are enough to lend an impetus to the sale of substitutes. Fancy colors killed the last fashion for cloth shoes in England and shoe dealers want no more greens and fawns.

* * *

To judge from the reports of Nottingham machine makers America is going into lace production on a very large scale. John Bromley of Philadelphia is named as a large buyer of Lever's net machinery. Beginners are warned to expect to find more trouble in working net machines than in making curtains. Nottingham machinists are all busy and likely to remain so during the two years in which their product is exempted from American duty. The after prospect does not dismay them. They retain a virtual monopoly in machinery of their own type, although, of course, Nottingham manufacturers have to import some machines from Plauen.

* * *

A new American customs requirement has moved some of our carpet manufacturers to apply to the Government to exert its influence. On official sample cards supplied, the exporter is directed to attach duplicate samples of the carpets specified in the invoice. He is to fill in the customer's name, a description of the goods, the width, price and discounts. At the foot he is to sign a form saying, "I do certify that the sample hereto annexed is a fair and true sample of piece No. —— contained in package No. ——." Manufacturers want to know whether they have to send 100 samples all alike to represent 50 pieces of one sort; also what they are expected to do when shipping woven squares. Sir A. F. Firth, vice-president of the Firth Carpet Co., Firthcliffe, N. Y., and of T. F. Firth & Co., Ltd., in this country, is the man who suggests that the real way to deal with these restrictions is to impose similar ones on goods entering this country.

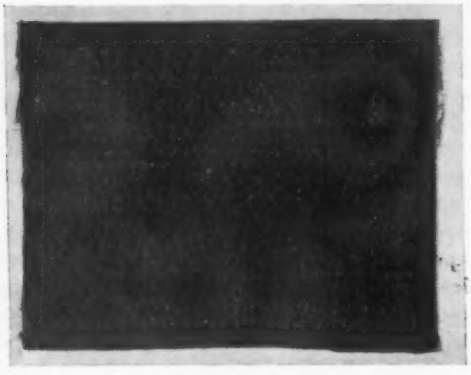
* * *

The first practical measure to be taken on any large scale to reduce the vegetable fiber

in wool nuisance has been taken by Dalgety's of Sydney, N. S. W. They have ordered 50,000 wool packs of the ordinary Calcutta variety, heavily mangled with a solution of algin. The excess cost is from 6 to 12 cents a bale and the algin is relied on to prevent that fraying of fibers which in the long run lands the worsted manufacturer in so heavy a cost for burling. As two million and odd packs are needed each season in Australasia it is to be seen that Calcutta jute mills have large customers in the colonies.

* * *

Mohair crepes, of which patterns are sent herewith, are among the favorites for this spring. Of single yarn throughout they have a bright mohair warp and a luster-wool or low mohair filling. The goods come in at 44 to 50 cents a yard and are dyed to the very soft amethysts, sapphires, greens and



MOHAIR CREPE.

fawns which run through all the patterns of the season. The appearance is characteristic and more nearly resembles pongee or shantung silk than anything. While costing no more than French wool crepes they will probably yield much more wear to the consumer. Priestley's "Resilda" is the forerunner of much of this style of stuff.

Imports of cloths and other manufactures of wool amounted in the fiscal year 1909 to a total foreign value of $18,100,460, a decrease of $1,287,518 from the year preceding and of $3,560,052 from the average of the six previous years.

FANCY COTTON GOODS.

By J. W.

Fig. 1 is a style of cotton cloth much in demand at present for winter goods. The cloth is woven by a dobby in the ordinary manner after which, a nap is raised on the back side of the cloth to give warmth to it. It is intended to give all the details connected with its manu-

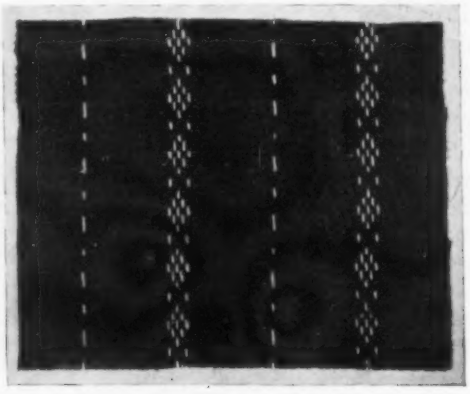


FIG. 1.

facture, also, as a guide to the various classes of colored goods.

Fig. 2 is the full design and drafting for the heddles.

Fig. 3 is the harness chain 6 heddles being required.

The particulars for the cloth are: — 40 dents per inch in reed, 1, 2 and 3 threads in 1 dent, 18s and 22s warp, 40 picks per inch, 12s filling. The warp will be 34 inches in the reed, cloth 32 inches from the loom and 30 inches wide after brushing and raising a nap on the back. About 64 yards of warp will be required for 64 yards of cloth.

WARP PATTERN.

20	threads	navy	=	20	dents
2	"	white	=	1	"
19	"	navy	=	19	"
1	"	navy	=	1	"
2	"	white			
1	"	navy	=	1	"
2	"	white			
1	"	navy	=	1	"
2	"	white			

1	"	navy	=	1	"
2	"	white			
1	"	navy	=	1	"
2	"	white			
56 threads				45 dents	

40 dents per inch in reed, 34¼ inches reed space = 1227 dents in reed required for warp.

45 dents per pattern, 1227 dents 27 patterns and 12 dents over.

56 (threads) × 27 (patterns) = 1512 ends.

1512 (ends) × 24 (selvage) = 1536 ends.

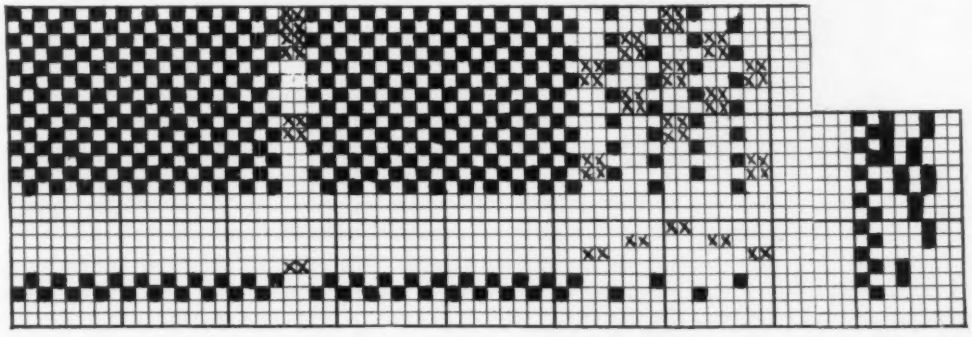


FIG. 2.

There are 44 Threads of Navy per pattern.

" " 12 " " White "

44x27	(patt.) + 24 threads selvage	= 1212	navy.	18s
12x27	"	= 324	white.	22s
	Total threads	1536		

The cheapest and best method is to order the yarn in two warps: 1212 threads of 18s, and 324 threads 22s, from the spinner to be dyed and sized, or bleached and sized as required, afterwards being dressed onto weaver's beam.

The weight of yarn will be as follows:

(1212x68 yds.) ÷ (840x18) = 5.45 lbs. 18s navy warp.

(324x68) ÷ (840x22) = 1.2 lbs. white warp.

(40x34x64) ÷ (840x12) = 8.6

8.6=.95 (109-5)= 9 lbs.

Navy warp	18s =	5.45 lbs.
White "	22s =	1.02 "
Filling	12s =	9. "
Total for 64 yards		15.47 lbs.

CARD GRINDING.

(From the Grinding and Mounting of Card Clothing recently published by Dronsfield Bros., Ltd., Oldham, England.)

(Continued from December.)

Another system of sheet-grinding is by the aid of the Dronsfield sheet grinding machine, Fig. 9, which is specially contructed for "side" and "surface" grinding single sheets in a very thorough and careful manner. The sheet is placed on the bed plate under the grinder and secured by clamps with stretchers, of which the screws, A, act as tighteners. The sheet is traversed regularly to and fro across the slides by special gearing.

The "side" grinder employed and illustrated, B, is of a different type from those in the machine shown at Fig. 1. It consists of a roller upon which are mounted a large amount of emery rings of the type already described, held apart by turned iron packings of exact similarity of thickness. This roller is fitted with a traversing motion which is calculated to give one traverse to and fro in 24,000 revolutions, a traverse which is complete but almost imperceptible; by this means the teeth are not mutilated by the passage of the emery rings, and violent abrasion is eliminated. By careful adjustment of the emery rings and the length of traverse to correspond overlapping of the emery rings upon neighboring sections of wires is avoided, every ring operating upon the section allotted to it without any teeth being missed, or, on the other hand, sub-

jected to duplicate grinding. For "surface" grinding the "side" grinding roller is replaced by the long emery fillet grinding roller. After the grinding operation, the sheets are cut up into separate "tops," and are ready for mounting upon the iron flats.

CARD MOUNTING.

1. Fillets: Having thus dealt with the grinding of card clothing by the card maker,

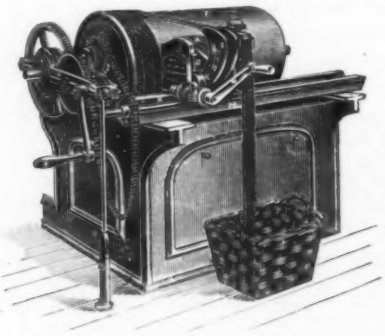


FIG. 11.

we have now to direct our attention to the manipulation of the same in the hands of the carder. Before dealing with the actual mounting of card filleting upon the various organs of the carding machine and its subsidiaries, there is a matter which behooves the strict attention of the carder or the person employed to do the clothing, a matter of the first importance, viz—the primary grinding of cylinders and doffers on the bare sur-

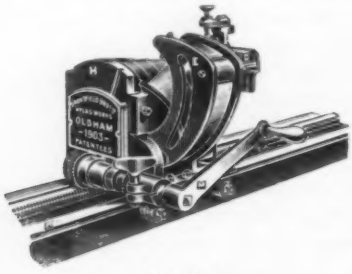


FIG. 12.

face preparatory to clothing. Attention to this detail will save the carder much anxiety in the saving of blistered filletings, loose teeth, and other drawbacks which make it impossible to obtain true grinding, and consequently good setting.

To many it has come as a revelation that iron cylinders, having been once ground

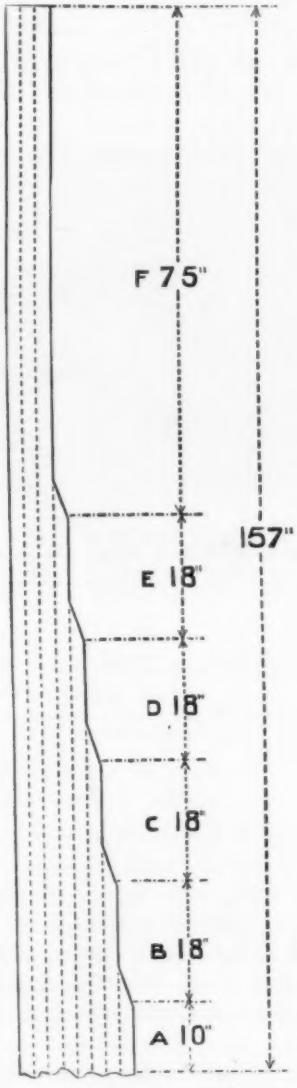


FIG. 13.

true at the machine works, should be found irregular after several years' working; but such a fact is being proved daily. Apart from this surface irregularity, it has to be

borne in mind that the ordinary wear and tear of the cylinder shafts and the pedestals will account for untrue running of the outer periphery of the cylinder. From whatever causes this defect emanates, whether atmospheric conditions or general wear and tear, suffice it to say that such is the case, and many spinners of late years have insisted upon the cylinders and doffers of even new cards being trued up before clothing.

(To be continued.)

HINTS ON BACKWASHING.

BY JOHN BROWN.

A few hints relating to backwashing may not be out of place.

1. The reason why carded worsted wool is backwashed is that any dust or dirt remaining after carding shall be removed, and thus a brighter appearance be given to the finished top.

It should be borne in mind that backwashing is simply a rinsing and by no means a scouring process. The rinsing is just sufficient to wash out all traces of oil used in carding, and any other loose matter adhering to the fibers. In order that this may be efficiently done, the slivers should enter the bath or bowl free from all twist, and as open and flat as possible. Where the slivers are brought to the backwasher in cans direct from oilers on cards, this is an easy matter. If the sliver from the cards is made into balls, they should be put into creels and under no circumstances should the sliver be drawn from the inside of the ball; otherwise the twist formed will to some extent hinder the liquor from getting into, and passing freely away from the sliver at squeeze or nip of rollers.

2. Liquor: For this the water should be pure. The best and most economical way of obtaining a supply of water is to have a tank, into which all the condensed water from steam traps attached to combs and cylinder steam service can be run. This should provide about as much water as is required, and besides requiring less soap, owing to its softness, the water will also be warm, thus requiring less live steam to bring it up to the required temperature.

If the tank is fixed, say on brackets or pillars, slightly higher than the top of the bowl level, no pumping or forcing will be required.

3. The cleansing should be accomplished chiefly in the first bowl. The amount of soap varies with the different qualities of wool, so no definite formula can be given. In the second or finishing bowl, only enough soap to enable the wool to pass through squeeze rollers without cutting or fraying should be used.

Although low qualities of soap with a high percentage of cotton seed oil may be used for some classes of wool in the scouring process before carding, the best soap obtainable should alone be used for backwashing. It should be noted that the best soap has the lowest scouring power. Appended is analysis of three standard makes of soap for backwashing purposes:

	A	B	C
Water	44.00	40.80	56.80
Fatty matter, unsaponified	.70	.50	.40
Fatty matter, saponified	43.23	46.23	33.71
Free caustic potash	.22	none	none
Carbonate of potash	4.41	4.48	3.03
Combined potash (R_2O)	6.50	7.40	5.31
Potasium chloride	.74	.39	.65
Insoluble mineral matter	.20	.20	.10
	100.00	100.00	100.00
Scouring power	40°	38°	48°

The fatty matter is olive oil with a small proportion of tallow.

4. In many mills when a scouring liquor has been made of the required strength the machine is started, and no further attention is paid to it, except to add a little soap from time to time, or to turn on the steam to warm the liquor, until it becomes charged with dirt and discolored. Then the machine is stopped, the old liquor run off and a new one made. This system has many disadvantages. Besides loss of time while changing the liquor, the slivers which are resting on cylinders have a tendency to scorch. There is, moreover, a difference in color between the slivers from the old and new liquor.

A far better method is to have a constant renewal going on all the time the machine is running, Fig. 1. This can easily be done by leaving the water valve slightly open after making the first liquor for the day, allowing altered to any speed, giving the supply of soap required. Being driven from end of roller the supply stops as soon as the machine stops. Where this system is used the melted soap should be diluted with 2 to 4

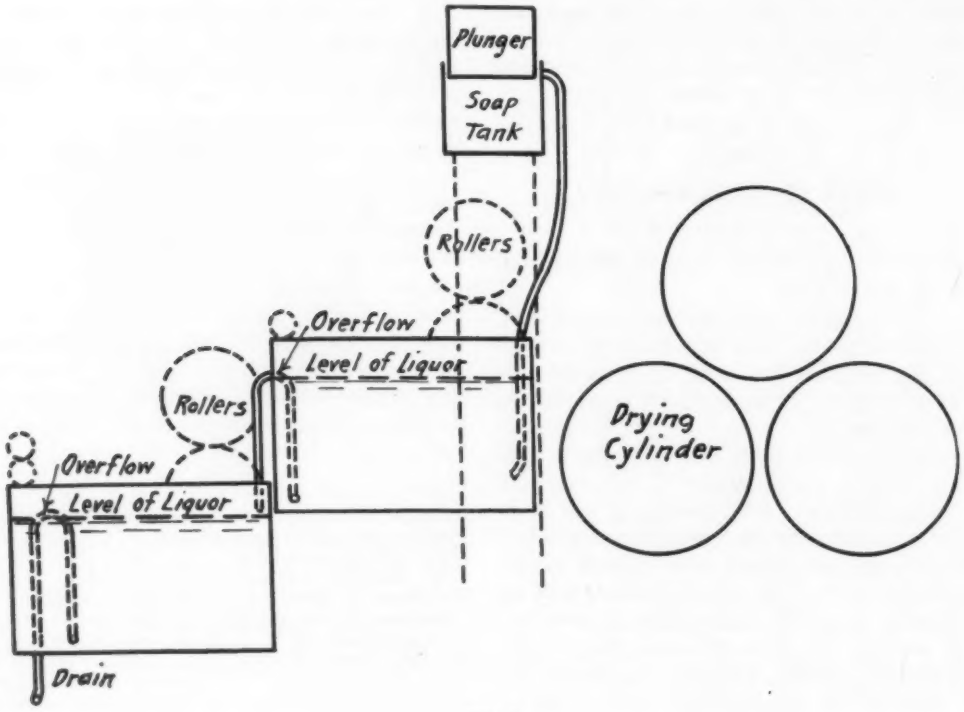


FIG. 1.

enough to enter to cause a slight overflow from second to first bowl. A siphon, Fig. 1, takes the water from the bottom of the second bowl, and thus the dirtiest water runs off first. Another siphon is fixed in the first bowl, this time on the side of the bowl, and carries the dirty liquor direct to the drain.

Each bowl should have a good thermometer, fixed so that it can easily be seen by the attendant, and the liquor kept at an even temperature. This is a very important point, and for fine wools the temperature should not exceed 110° F.

Fig. 1 shows a soap tank fixed on a roller cross bar. This is fitted with a plunger regulated by a train of wheels, which can be times its weight of water, so that it flows easily from tank to bowl.

The bottom squeeze rollers should always be brass coated, as the difference in first cost between brass coated and all iron rollers is soon made up in the saving in lapping, and freedom from rusting when the machines have to stand for a short time. To get a better grip on the wool the brass should be slightly scratch fluted. The top roller should have an outer coating or lapping made from long Scotch wool, slightly twisted. Cotton warp lapping may cost less, but when it begins to fray, the loose fibers mixing with the wool which is passing through means damage to the dyed and finished cloth.

It is permissible in starting a new machine to use about two layers of gasket for a base, then from 3 to 5 of wool for outer lapings. The first time the rollers are stripped the gasket should be thrown aside and the bottom layers made from the lapping which has previously been used for outer covering.

Great care must be taken in lapping to have every layer as even as possible, and every round pressed firmly against the one preceding it. The nip of the rollers should be as near the level of the liquor as possible so that the slivers come to nip fully charged with liquor. By having the water suddenly forced out of the sliver there is a better chance for any loose dirt to be cleared off than if most of the water has drained off before coming to the nip.

All rollers should be dead-weighted, thus securing an even pressure whatever bulk of wool is going through, minimizing any danger of cutting. With some classes of open wool there is at times a tendency for the sliver to cling to the roller and form a lap which may lead to serious consequences. A good way of detecting this difficulty is to have a bell fixed to the framework of the machine near the extreme end of the weight lever, with a projecting finger over the end of the lever, Fig. 2. When any extra thickness raises the weight lever above its normal position, the bell is rung and the attention of the attendant is at once called to the trouble.

Whenever the rollers are stripped for relapping, all the joints and pins in compound levers should be taken out, cleaned and slightly oiled. This will prevent wear and tend to easy action of the levers.

The cylinders of backwashing machines have for some time received more attention than any other part. The cylinders of the ordinary type are of iron and consist of a highly polished shell running on a steam chest upon which it works. The wool is dried by passing from one cylinder to another, alternate sides of the sliver coming in contact with drying surface as it passes over the series of cylinders Unfortunately, with heavy wools, the amount of heat required and the length of time that each side has to rest on the hot surface has a tendency to scorch it. To overcome this difficulty the multiple cylinder backwasher was adopted by many firms. Still with this style only the outer surfaces of the slivers come in contact with the drying surface. When heavy loads were put through the machine the core of the sliver has been found to be only slightly drier than when it left the squeeze rollers. Recently Howarth & Musgrave, of Bradford, and Messrs. Whitehead & Layland, of Leeds, have patented backwashing machines in which this defect has been entirely overcome.

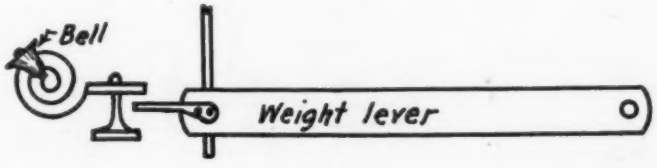


FIG. 2.

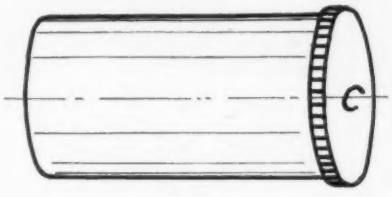


FIG. 3.

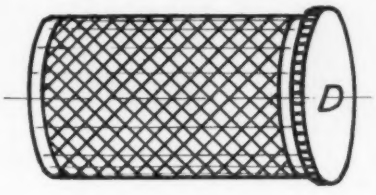


FIG. 4.

In both machines actual contact between wool and heating surface has been done away with, and the drying is done by a current of hot air passing entirely through the slivers, thus ensuring uniform drying of all parts. This is accomplished by making the shells of either wire gauze or perforated brass plates. Figs. 3 and 4 show plainly where the difference comes in. Instead of the wool being dried solely by contact with surface of cylinder, hot air in the Howarth & Musgrave machine, Fig. 5, is forced through the apertures of the perforated surface.

In the Whitehead & Layland machine, Fig. 6, hot air is drawn through the slivers by means of an exhaust fan fixed over the top of the cylinder box. In this machine the whole of the cylinder is inclosed. Doors at the side and top enable the attendant to get at any slivers that may break. On the gearing side of the machine, which is also inclosed, thus forming a heating chamber, all steam pipes are fixed and everything about the machine tends to abolish the uncomfortable heat which prevails in most backwashing sheds. The exhaust pipe from the fan can be taken into the open air if desired.

In Howarth & Musgrave's machine, Fig. 5, the cylinders are inclosed only on the sides, and the hot air is forced through the fibers. This prevents condensed water from returning to the fibers.

In Whitehead & Layland's machine there is a moisture escape valve to accomplish the same object. The main object accomplished by both machines is passing over the perforated surface. There is no danger of scorching. The hot air passing through slivers even when the machine is standing lift the fibers, thus making them loftier, easier to gill and better to spin. The drying, it is claimed, is accomplished nearly 50 per cent. quicker, saving both steam and power. No more space is taken up than with the old style machine, and in both there is the greatest simplicity in manipulation. Whitehead & Layland claim that they have no cylinders to blow or burst and no stuffing boxes to leak.

Fig. 6 shows the Whitehead & Layland machine with doors open for examination. The cone shaped studs should be noted.

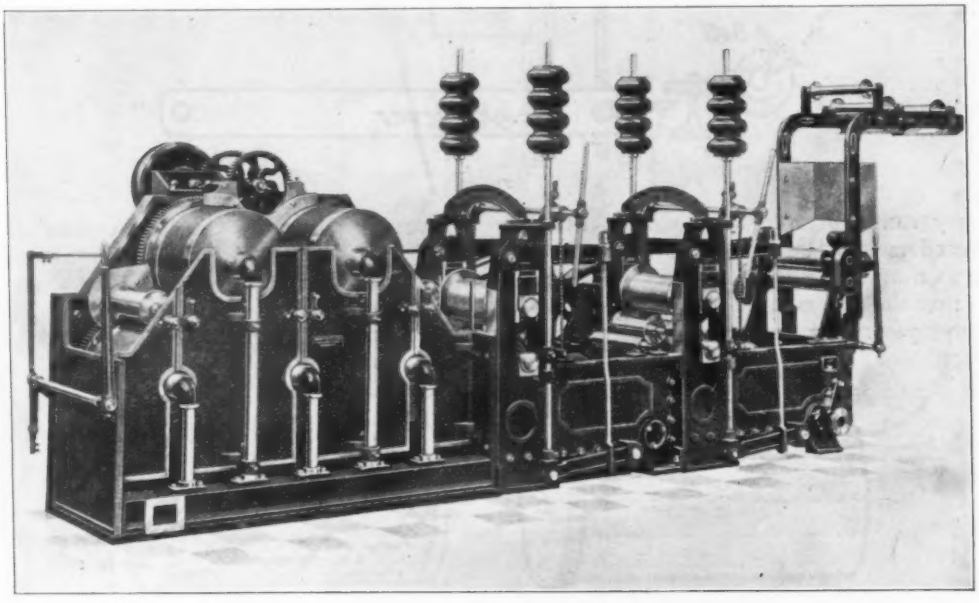


FIG. 5.

Provision for easily regulating the heat is made in both machines.

In all classes of wool the draft in the backwash gill should be under rather than over what the wool will stand. For low

is far preferable to either revolving funnels, grids or a triangular orifice.

When the balls are taken from the backwasher they should not be thrown into wicker skips, unless the latter are lined.

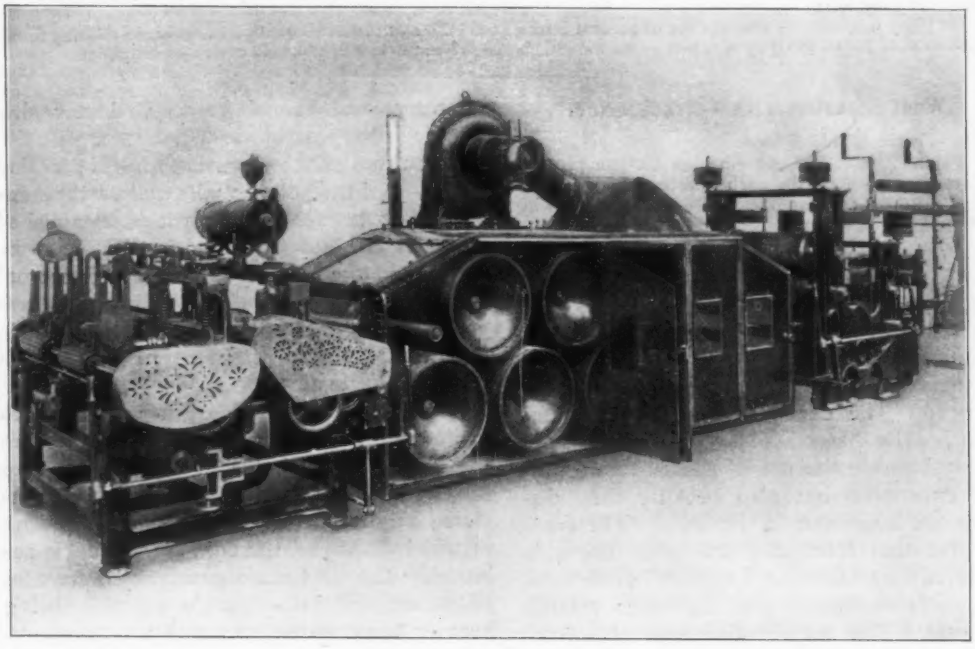


FIG. 6.

classes of wool fallers pinned 12 per inch No. 16 wire will be found suitable. For fine botany sorts, up to 20 per inch with 20s wire will not be found too fine.

To prevent the edges of the sliver from

They should be carefully piled in boxes or bins. Any outlay in this direction is soon recouped by saving in waste. The purest water, the best quality of soap and oil, keeping every part of the machine in the best

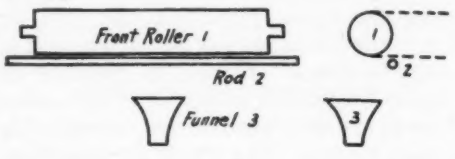


FIG. 7.

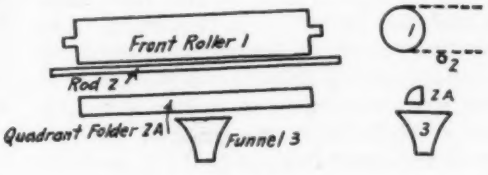


FIG. 8.

clicking when the balls are being unwound, an additional bar should be used in addition to the one which presses the drawn sliver to the leather. It must be set as close to the funnel as possible, Figs. 7 and 8. This folds both edges of the sliver into the center and

possible condition, these are essential to the best results in backwashing. The thanks of the writer are due to Messrs. P. Smith & Son and Messrs. Taylor, Wordsworth & Co. for photos, etc., of their machines, which are protected by patents.

Questions and Answers

Under this head we undertake to answer, free of charge, to the best of our ability, any pertinent inquiry pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD RECORD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring ,not for publication, but as an evidence of good faith.

For reply to questions that are not of general interest to readers of textile journals, such as those relating to the composition of yarns, analysis of fabrics, etc., we will charge the enquirer with the cost of the investigation.

Wool Scouring with Tetrachloride.

Editor Textile World Record:

I would like to get information on the process of cleaning wool by the carbon tetrachloride process. Can you tell me the name of the firm who furnishes the appliances for this process?

Shampoo (1145).

Our special English correspondent replies as follows:

I am unable to find that anyone in this country is either scouring wool by the process named or is making apparatus for the purpose. The use of grease solvents has been heavily discredited by past failures, not simply because the use of them is cumbrous and expensive, but also because they dissolve too much out of the wool. The lanoline fat that lubricates the wool fibers is removed by benzine, carbon disulphide, carbon tetrachloride and the other volatile solvents. This fat remains after the usual emulsifying process and so the ordinary means gives more satisfying as well as cheaper results.

In service tetrachloride has the advantage over benzine that it is not inflammable and over carbon disulphide that it does not stain the wool. But tetrachloride is so expensive that any leakage of it in process soon leads to prohibitive costs. It is procurable from more than one of the German coal tar firms at a cost here of about $1.60 per imperial gallon (i e., 10 cents a pound) and this is seven or eight times the price of benzine. Lack of industrial demand is the reason for the high price of the chemical and no doubt easier terms could be made for a contract running into hundreds of tons. Unpleasant consequences result to some persons from inhaling vapors from carbon tetrachloride and the death of one person in London has caused barbers to stop employing it in their "dry shampoos." Artemas Argus.

Our special French correspondent replies to this inquiry as follows:

The usual process consists, first, in freeing the wool of the soluble salts and earthy matter. The tetrachloride plant is established in order to allow the scouring liquor to be saved and the grease extracted. The wool is subjected successively to solutions of tetrachloride of carbon to remove the grease, then to the action of a current of steam in order to evaporate the excess of tetrachloride. A condensing apparatus is installed in the chamber in order to reclaim the tetrachloride that is in suspension. The installation furnished by Peltzer & Co., Verriers, Belgium, consists of a scouring tank in which is placed the cold tetrachloride solution. This is heated gently by a current of water, the tetrachloride solution being heavier than water. In this way evaporation is prevented.

The forks for moving the wool along do not come out of the liquor during the process. The rear of the scouring machine consisting of the elevator, apron and squeeze rolls, is enclosed by an air tight cover, in the interior of which a stream of cold water is forced. The wool from the squeeze rolls falls on the apron protected from the air and is carried to a bath of water where it is thoroughly rinsed. During its passage on the apron the wool is subjected to the action of a jet of steam to remove the tetrachloride that may remain. The air in this chamber, charged with vapor and tetrachloride, is forced into a column of water and the tetrachloride being heavier than water, settles to the bottom. The tetrachloride in combination with the grease from the wool is treated in a distilling apparatus where the tetrachloride is separated from the other materials. Gaul.

Price List for Looping.

Editor Textile World Record:

We are having a little controversy with our looper girls in regard to the price paid for 200 needle half hose looped on 20 and 22 point machines. There are no trimmers or ravelers on the machine. We offer them 9 cents per dozen with no deduction for bad work, but they claim that the large concerns pay 12 and 13 cents per dozen. One of them who formerly worked for a leading mill says they paid 12 1/2 cents per dozen. We have watched your Question and Answer Department for prices but have never seen anything like the above figures. Looper (1138).

The prices generally paid for this class of work are as follows:

200 needle on 18 point machine with ravelers, 6 cents per oz.

200 needle on 18 point machine without ravelers, 9 cents per oz.

200 needle on 22 point machine with ravelers, 7 cents per oz.

200 needle on 22 point machine without ravelers, 11 cents per oz.

In regards to some of the larger concerns paying 12 and 13 cents per dozen for this class of work, I have known a few manufacturers to pay as high as 12 cents in places where help was scarce, but this is only in exceptional cases and is not the general rule.

Weehawken.

Sizes of Union Suits.

Editor Textile World Record:

What are the standard sizes of ladies' and men's union suits? Dundee (1140).

I have gone carefully over and measured several lines of union suits that we are using and upon conferring with our salespeople find that the most satisfactory lines of suits are made on the scale of sizes, as given in the following list:

STANDARD SIZES OF UNION SUITS.

Men's Union Suits.

Size	Total length	Trunk length	Inseam	Bust	Waist	Sleeve
34	54	29	26	13	..	20
36	56	30	27	14	..	20
38	58	31	27	15	..	21
40	60	33	28	16	..	21
42	62	34	28	17	..	23
44	64	35	30	18	..	23
46	66	36	30	19	..	24

Women's Union Suits.

34	55	32	26	14	10	20
36	56	33	26	14½	10½	21
38	57	33	27	15	11	21
40	58	33	28	15½	11½	22
42	59	34	28	16	12	23
44	60	34	29	17	14	23

Children's Union Suits.

2	30	17	16	9	..	11
3	33	18	17	9½	..	12
4	36	20	18	10	..	13
5	39	22	19	10½	..	15
6	43	24	20	11	..	16
7	47	26	22	12	..	17
8	51	28	24	13	..	18
9	55	30	26	14	..	19

Fillmore.

Waterproofing Horse Blankets.

Editor Textile World Record:

Can you give us an account of a process for treating woolen horse blanket cloth to make it water proof without taking away the soft feel?

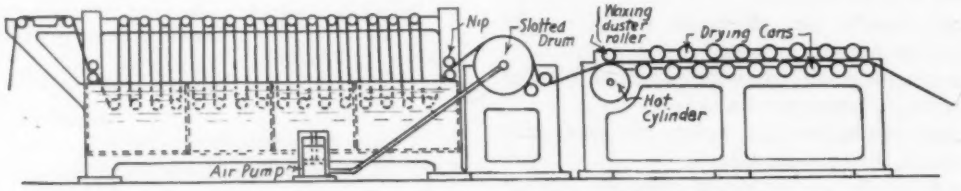
Blanket (1146).

In case "Blanket" has not already done so he should consult two articles on waterproofing printed in the April and May issues of the Textile World Record in 1907. Alternative methods are there set out and from the articles it may be gathered that to make a complete job of waterproofing on the best and most economical lines a rather elaborate outfit is necessary. It is possible that "Blanket" would do best to leave the proofing of the blankets to some firm fully equipped for the process.

In addition to the information given in the 1907 articles, I would say that much depends on the extent of the requirements. Sugar of lead and soap used in milling will help the blanket to resist water, but the filterings from this may be injurious to the animals. It would be safer to use aluminium acetate and soap, the former being made by mixing common alum and lead acetate together in solution and drawing off the clear liquor. This also will dissolve in time and the waterproofness will vary with the thoroughness of the impregnation.

The foregoing are makeshift methods at

best although they may serve the purpose. If thoroughly done the proofing would be conducted somewhat in the following manner. First the cloth would be scoured clean. It would then be fed into a machine, Fig. 1, in which there are four boxes with four rollers leading the fabric four times into and out of each. The first of the boxes contains water only and the others contain acetate of aluminium of varying degrees of strength. Leaving the last box the cloth passes through nip-rollers and round a slotted drum from which the air is being continuously exhausted by a powerful pump. This removes the water from the cloth and gets rid of the excess of alumina that would otherwise give trouble on the drying cylinders.



Before passing into the drying portion of the machine the cloth is waxed with a composition of waxes applied from a ductor roller working on top of a gas-heated copper cylinder. The cloth passes around a long succession of drying-cans and is delivered waterproofed. Such a machine holds 120 yards of cloth at a time and delivers 60-yard pieces at the rate of 15 to 20 per hour. It is built to order and may cost $6,000 to $8,000 or more.

A different and less efficient method of waxing is to pass the cloth over a wax-slab under the pressure of a flexible roller. Pneumatic rollers for this purpose are the subject of a patent in England and their use is not permitted without acknowledgment to the patentees. Waxing the cloth prevents or delays the dissolution of the alumina salt and adds to the waterproofness. Note that in following this process one has first to get rid of the grease. The general arrangement is such as to ensure a thorough penetration of the cloth by the mordant liquor. There should be no perceptible harshening of the feel when blanketing is properly treated in general accordance with the lines here laid down.

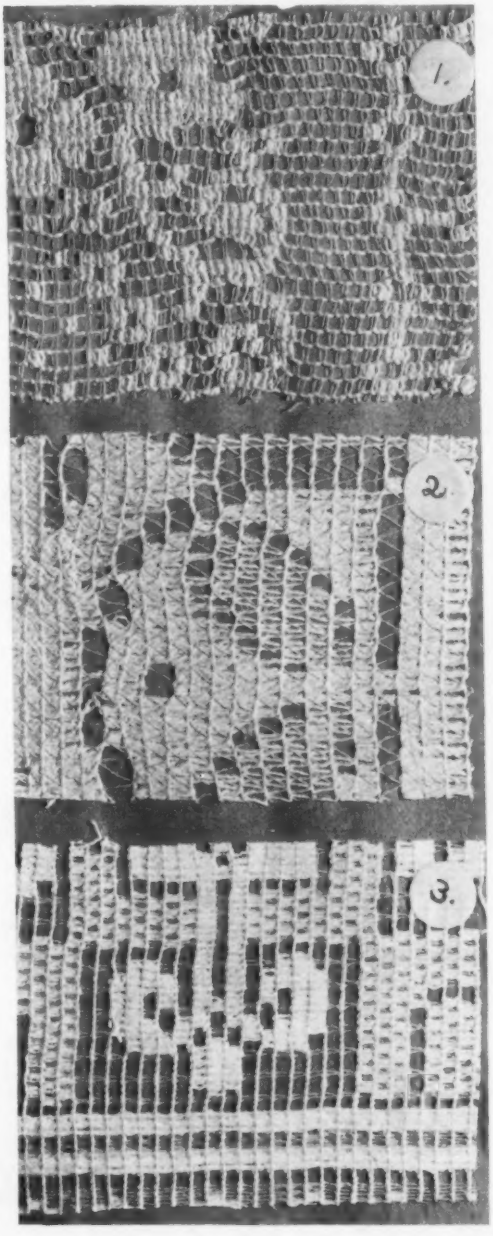
Double-Tones on Curtains.

Editor Textile World Record:

I enclose three samples of lace curtain, Figs. 1, 2, and 3. Fig. 1 is the goods as they come from the loom. Fig. 2 is scoured with a solution of caustic soda and soap. Egyptian yarn is used in the warp and American cotton spool yarn; both yarns unbleached. Fig. 3 is curtain woven with Egyptian unbleached warp and American cotton spool yarn bleached. This gives a decided contrast to the goods, which is what we want. There is quite a contrast in Fig. 2 sample, but not enough. I want to know if there is a scouring process to produce the two-tone effect on these goods? I want the net to have a rich brown shade and the design to have a decided white appearance. This effect can be obtained by using white yarn for our spool cotton and unbleached Egyptian yarn for warp, but I am informed that some manufacturers are obtaining this effect without using bleached yarn at all. It would be a great advantage to have a scouring process that would give this contrasting effect, as then we could keep unfinished goods in stock and finish them as desired. Pawtucket (1143).

The question has been before two English experts who are agreed on one point. "Pawtucket" can "resist" his unbleached Egyptian yarn in such a manner that it shall not discharge its color when the bleaching of the American spool thread is done in the curtain. The resistant proposed is paraffin wax, applied either from a wax rod or as one of the ingredients in warp sizing. If "Pawtucket" desires to produce the one-tone effect he can do so by continuing to scour with caustic soda and soap, which will destroy the wax and help to equalize the bleaching. When he wants the double tone he will have to give the curtain a lime-bleach

(bleaching powder, acidified with hydrochloric acid) and keep the solution at a temperature below the melting point of the wax employed. If paraffin wax is used the heat had better not exceed 100° F., but by blending in carnauba wax with the paraffin this limit could be much raised if required.



FIGS. 1, 2 AND 3.

I addressed some inquiries to discover whether dyed American cotton was ever used to replace unbleached Egyptian in making Nottingham double-tone curtains. Apparently dyed warp has been used, but the general practice is to employ Egyptian and American qualities together in "Pawtucket's" own way. One of the friends consulted observes that the sense of contrast between color of net and color of design may be aided in the designing by bringing a fairly close gauge of brown against and between the solid masses of whiter material.

Wessex.

Prices for Knitting and Looping.

Editor Textile World Record:

We are about to make a change in our methods of paying piece work for knitting and looping. We have a number of girls doing excellent work and some few who persist in turning out their work in a slipshod way, careless of the menders they make. We had thought of the premium plan, charging the operatives for all menders and paying a premium to those who do good work and keep their menders under a certain percentage. We would like to know what is a fair average of menders for the knitter and topper on 176 and 200 needle cotton goods, and for the loopers on a 16 and 18 point looper with the same class of work. There is considerable competition in this place and at times good help is scarce. If you can give us this information we would very much appreciate it.

Milton (1142).

This is the same trouble that all manufacturers have in starting a new mill. The premium idea is a good one if not carried too far. While it serves as an inducement for the help to do good work, still it establishes a precedent and it will be found necessary to offer premiums every time you wish something done. I have found it a better scheme to pay a good price per dozen and charge them up with all bad work due to carelessness over and above a certain percentage.

We must have in mind that looping is the most difficult operation in the manufacture of hosiery. It is much more difficult than picking on ribbed tops, as the stitches are much finer and tighter, and the operator has no slack course to follow as in the ribbed top. In breaking in new help for

looping I have found it a good plan to take experienced pick-on girls or toppers, as they are commonly called, and teach them to loop. As the operation is very similar to topping, I find they learn it much more readily than a new girl.

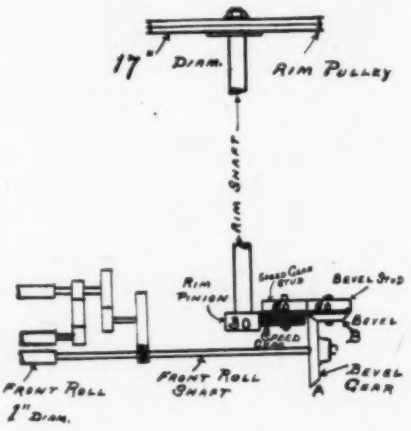
It seems a shame to spoil the work in the last operation. In order to avoid this we should, as far as possible, avoid the use of new help in the looping department. The new help can be used for toppers, and in turn using the toppers for loopers.

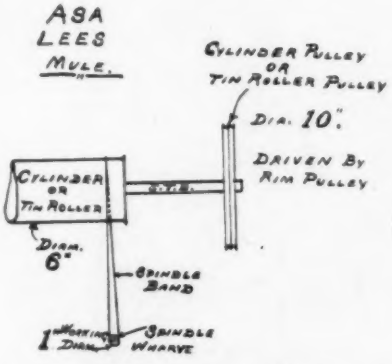
The amount of bad work usually made by toppers and knitters and loopers on 176 and 200 needle work depends largely upon the class of goods being manufactured. For example, there would be considerable more mending on single thread work than on double thread. The mending on this class of work will range from 5 to 8 per cent., according to conditions. The menders in the knitting department should not run over 3 per cent., about evenly divided between the toppers and the knitters. In the looping department, the mending should not run over 2 per cent. If the seconds are held down to about 5 per cent. in a mill manufacturing this class of goods, it is considered good work. Above 8 per cent. is considered poor work. In a new mill the mending is sure to run considerably above this figure. In some cases I have known it to run as high as 16 per cent. From my own experience I have found it an excellent plan to have inspectors and menders in each department and have the work all inspected and carefully mended before being passed on to the next department. In this way it enables the foreman of each department to see how the work is coming along. It also gives him an opportunity to show the operators their work. If the goods are mended before leaving the knitting department they pass as perfect. If they are sent into the other departments without first being mended they become so defective by the handling that they are unfit for use and are made into seconds. This plan necessitates extra handling, but I have found that it pays in the end, as a stitch in time saves nine.

Weehawken.

Formula for Finding Speed Gear.

The accompanying illustration was unfortunately omitted from the reply to "East-





on's" question regarding the formula for finding speed gear, which appeared on page 24[illegible] of the November issue.

The estimated wool production of the entire world in 1895 was 2,692,986,773 pounds. The production of the entire world, according to the latest official estimates, is 2,804,136,546 pounds—an increase in all these years of only 111,149,773 pounds. The wool product of the world is not keeping pace with the increase of the wool-using population, for the per capita product in 1895 was 4.88 pounds, while now it is 4.27 pounds.

Gabardines.

Editor Textile World Record:

I have heard of a cloth sold on the London market under the name of "Gabardine." I should be pleased if you would tell me what it is made of and how finished. I should like to get a sample of it. It may possibly be an old cloth that has been patented by a manufacturer, as this is often done to create a demand for it.

Rainproof (1139).

Our English correspondent replies to this question as follows:

A gabardine is a garment and gabardine

FIG. 1.

cloth is any fabric suitable for making that garment. Gabardine was an obsolete word signifying a loose cloak or cape until the London tailors, Burberry's of Golden Square and Haymarket, appropriated and widely advertised it. They attached the word to the flowing raincoats then coming into fashion and have vindicated their title to its exclusive use. The word has many imitations—"Zambrene," "Garbirnett" and "Garbirrcord" are a few of many now on the register. To make my first point clear I send a fashion plate of what is called the Burberry-Gabardine-Slip-On, Fig. 1.

There is a great variety of what are

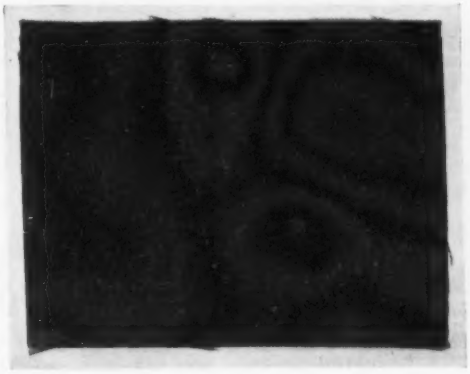


FIG. 2.

loosely called "gabardine cloths" by manufacturers and the fabric is incapable of exact definition. The name does not include coverts—which have an older standing—nor yet the low paramattas with a cotton warp and a worsted filling which go for the rubber-proof trade. With only rare exceptions the term embraces all that goes to make the English raincoat. All-cotton twills, botany-warp twills, all-worsted twills and worsted filling twills, principally in drab, olive, fawn and green self colorings, are unmistakably included. The scope of the term is widening now that cloths of a fancy character are being made into gabardines and cloths with colored effect threads and chevron twills in all kinds of shades now get this name colloquially.

I send patterns of three typified gabardine cloths less for the sake of the weave than of the finish. One of them is shown at Fig. 2. These are rainproofed without rubber by the Millerain process and the efficacy of the proofing may be exhibited by extending the cloth and pouring water upon it from a jug.

Artemus Argus.

These samples can be seen at the Boston office of the Textile World Record.

KNITTING DEPARTMENT.

For Knitting Mill Machinery, Equipment and Supplies, see pages 236 to 253. Also Buyers' Index.

THE KNIT GOODS SITUATION.

The demand for knit underwear during the month of December has kept all manufacturers busy and the activity has been so spread among all lines of underwear that it is quite apparent that jobbers' and retailers' stocks are very light. As the manufacturers have no accumulation, we will go into the year of 1910 with no stock lots to cause any embarrassment to the market.

A large volume of business has already been placed by the jobbers for fall. Several manufacturers have gone as far as they care to on their present holdings of raw materials and have temporarily withdrawn their lines until the situation becomes more settled. There is, of course, a great deal of business to be placed during the months of January and February, as a large number of buyers do not place any orders until they come to the market in these two mentioned months.

The writer heard a prominent manufacturer of fleeced underwear make the statement that although he had sold over half of his production, he had booked orders for only 20 per cent. of his regular customers.

The lower priced lines of men's fleeced goods made by Southern manufacturers are being sold at $3.20 for February delivery to $3.35 for July delivery. These run in weight about 12 pounds on size 42 and are made in Alabama. The next in price are those made by a large manufacturer in Little Falls at $3.37 1/2, weighing about 12 pounds on size 42. Then there is a line made in Virginia at $3.35 for February and $3.50 for July deliveries, weighing 13 pounds on 42.

The Union Company are showing four lines of men's fleeced goods, a 12-pound Sagamore number at $3.57 1/2; a 13-pound garment made in the same mill at $3.75; also a 12-pound number made in the Harder Mill at $3.80, which is the same grade as was sold last year at $3.37 1/2. For their standard goods, they are asking $3.90, against $3.75 last year. This concern is showing a line of boys' goods at $2.25 in plain colors, also a line of boys' random mixtures at $3.00, and in keeping with the increased demand for Union suits, have started to make men's heavy fleeced union suits in Jaeger and silver colors at $7.25, and in blue random at $9.00, on which they claim they have taken large orders.

The Highrock Mills are making three grades of men's fleeces,—a 13 1/2-pound garment at $3.75, a 14-pound garment at $3.85 and their standard Red Label brand, 14-pound goods at $3.90. The last named number is sold at $4.15 with a rebate of 25 cents per dozen to the jobber, providing he maintains the price of $4.45 during the season. This company has decided to put the Highrock hanger only on the restricted line and will mark the others "Summit Fleece."

On the better lines of men's fleeced goods, prices are held about the same as last year. We refer to those well advertised lines, such as, Lambsdown and Wright, which are sold to the jobbers at $5.50 to $7.12 1/2.

The business on men's ribbed goods has been very large up to the present time. Owing to the advanced price, the bulk of the business seems to be placed on 11-pound, instead of 12-pound goods, as last season. The J. K. Stewart Co. had an 11-pound garment at $3.40 early, but soon advanced it to $3.50, and it is said that their 12-pound garment which was sold early at $3.60 was advanced to $3.65. These people also showed an 11-pound garment made on a new Interlock machine at $3.75, and it is reported that buyers have been very liberal in placing their orders on this line of merchandise.

The LaTosca Knitting Co. are showing a line of men's ribbed shirts and drawers made on the same machines, Interlocked, of combed yarns in 8 and 10-pound weights at $6.75 and the suits in the same fabric at $12.00 per dozen.

The Velvetrib line is being shown at the same price as last season, namely, $7.00 for the shirts and drawers in either 8 or 12-pound weight and at $12.00 for the suits. This line is made by the Oneita Knitting Co. They have adopted a restricted price and ask the jobber to get $8.62 1/2 for the shirts and drawers and $16.50 for the suits.

The Bradford line of men's wool and merino rib goods have also come in for a goodly share of early business placed by buyers when in the market and there is considerable evidence that the trade are taking the ribs in place of the flat goods in wool, as well as in cotton. They are showing a line of shirts and drawers at $7.50, $9.00, $10.50 and $13.00, with suits in the corresponding cloths at $12.00, $13.50, $15.00 and $18.00.

One of the new and widely advertised lines of underwear to appear for the jobbers' inspection is the Twolayer brand made by the Utica Knitting Co. As its name implies, these goods are made of two layers of cloth, very similar in construction to the Duofold idea which has been on the market for some time, the principal difference being that in the Twolayer line, the inner fabric is always fleeced. It is claimed by the manufacturers that the two fabrics are lighter than one thick fleeced fabric. The line is made to sell to the jobbing trade only and at the same prices as the Vellastic line. The prices to the retail trade are restricted by the manufacturers.

Jobbers advise us that the orders for spring goods continue to come forward very freely, although it has been necessary to raise some prices to cover advances made by the manufacturers for duplicates. This does not deter retailers from placing liberal orders.

Manufacturers are now being urged very strongly by their selling agents and by jobbers to anticipate deliveries. It appears that everyone is taking time by the forelock and beginning to hasten along deliveries, even before they are due, instead of waiting until the delivery dates have passed as in former years.

HOSIERY.

Hosiery prices are advancing steadily, but manufacturers report a good business even at the higher prices.

There is not much that is new being shown, for the reason that manufacturers have all they can do with established lines and styles, and have no time to give to experiments.

One or two new makes of ladies' silk hose are on the market and those at the low price (about $8.00) are being eagerly purchased. The big scarcity of silk hosiery for the Christmas trade will unquestionably give this business a further impetus.

A thread silk German made stocking is being shown at M19.25 and while it is good value, it is not as clear as the domestic goods, and therefore not as salable.

Prices in Chemnitz are advancing also and it is not possible now to procure the values there that were to be had immediately after the new tariff bill went into effect.

One or two domestic manufacturers are now making infants' pure silk ribbed hose in black, white and colors in a quality to retail at 50 cents a pair. There is a quantity of this hose sold in this country, and consumers will give preference to the domestic seamless kind over the foreign fashioned goods. They should be made so as to cost the jobber about $3.50 for all sizes from 4 to 6 1/2.

Prices on seamless fleece lined cotton hose for the fall of 1910 show a very marked advance, varying from 7 1/2 to 15 per cent. and even more. Goods weighing 28 ounces that for the fall of 1909 cost 77 1/2 cents are priced 85 cents for the fall of 1910, and goods weighing 24 to 26 ounces and with patent toe are made to take their place at 80 cents.

Large orders are placed by jobbers, however, as they realize that prices are probably up to stay for a while. Orders are placed at the popular prices and in the lighter weights.

Wool and cashmere goods in general are sold at old prices, though the qualities have been sacrificed somewhat in order not to advance prices.

COST OF HALF HOSE.

St. Joseph, Mich., Nov. 18, 1909.

Editor Textile World Record:

We are very much interested in the article by "Merrill" on the cost of 176 needle ladies' hose in your November issue. It seems to be very complete. We believe many mills get their mill expense too low and do not figure any waste whatever. We would like to have "Merrill" figure the cost on 188 needle half hose made of mercerized Sea Island yarn costing 70 cents per pound, goods weighing 1 1/4 pounds off the machine. Cooper, Wells & Co.

The cost of any article will vary considerably, according to conditions in different mills. For example, the cost of labor may be much more in one locality than in another; or one mill may be better equipped than another. For this reason I will pay more attention to the system used for finding the cost than to the exact cost of goods. I will give the exact cost, if I were to manufacture the goods at the mill where I am now and try to make the explanation of the system so clear that it can be applied to any mill.

I shall first enumerate the different items of cost and then take up each item separately and show how the exact cost of each item may best be obtained.

The different items in the cost of these goods are as follows:

Yarn, 1¼ lbs., .70 per lb.	$ .875
Waste, 2 oz., .70 per lb.	.0875
Knitting tops, .50 per hundred doz.	.005
Cutting tops, .25 per hundred doz.	.0025
Picking on tops, .08 per doz.	.08
Transferring tops, .05 per doz.	.05
Turning goods (4 times), .25 per hundred doz.	.01
Looping, .045 per doz.	.045
Mending and inspecting, .02 per doz.	.02
Dyeing, .04 per lb.	.05
Forming, .025 per doz.	.025
Mating, .02 per doz.	.02
Pressing, .01 per doz.	.01
Stamping, ticketing, folding, tying and boxing, .015 per doz.	.015
Paper box, .02	.02
Seconds, 5 per cent.	.08
Superintending and handling, .07	.07
General or mill expense, .22 per doz.	.22
Cost per dozen, exclusive of selling.	$1.685

This is the cost of goods in our mill. Of these items we shall class the following as fixed, and which require no explanation aside from the fact that they may differ from prices paid in other mills:

Yarn.
Knitting tops.
Cutting tops.
Picking on tops.
Transferring.
Turning.
Looping.
Mending and inspecting.
Forming.
Pressing.
Mating.
Dyeing.
Stamping, ticketing, folding, tying and boxing.

We then have the following items which will require some explanation and which I think are the most important items in figuring the exact costs, and also the items which most manufacturers overlook in their costs:

Waste.
Seconds.
Superintendency and handling.
General mill expense.
Selling.

Waste is a very important item, and I think but very few manufacturers know what it amounts to on the goods they manufacture. I have allowed 2 ounces per dozen for waste. As we do not manufacture an exact duplicate of the goods in question it was necessary for me to take from our line a style as near as possible to this one in order to make the tests. I feel sure, however, that the figures are as nearly correct as it is possible to make them. In determining the amount of waste per dozen on any given style I weigh from 300 to 1,000 pounds

of yarn, knit it up and follow the goods all through the mill until they are ready to dye. I then weigh the goods and count the number of dozen. The difference in the weight of the yarn and the weight of the finished goods before dyeing represents the amount of waste. From this we can easily calculate the amount of waste per dozen. I have known manufacturers in making tests of this kind to weigh only the waste as it comes from the machines. I have found this to be unsatisfactory as usually some of the waste is omitted or mislaid. In the 2 ounces of waste which I have figured in this cost is included all ravelings from toppers and loopers and all other waste from start to finish.

I have allowed 5 per cent. for seconds. I have found this by actual test to be the average loss from seconds on goods of this grade. These figures may vary some in different mills, as the class of help and equipment of mill has much to do with the amount of seconds. In making the tests to determine the amount of seconds I take 1,000 dozen of the goods just as they come from the machines and follow them through the mill, marking all tags special. After the goods are all mated and boxed they are counted and the difference between the boxed goods and the 1,000 dozen which started from the knitting department represent the seconds. The seconds will usually average from 4 to 8 per cent. for the entire year. Anything below 6 per cent. is considered a good result.

Under the head of superintendency and handling is included all day workers throughout the mill, including superintendent, foreman, office help and machinists, but not including the salesman. To find the exact cost per ounce for this item it is necessary to take an entire year's business. Keep an account of the exact number of dozen manufactured during the year, also the amount paid to day workers during the same length of time. From these figures we can easily calculate the cost for superintending and handling per dozen. This item will vary in different mills. It runs much higher in small mills than in those with a large production.

We now come to the item of general mill expense. In this is included taxes, repairs, insurance, profit and loss, discount, needles, lights, power, fuel, oil, office supplies, advertising, freight, express, depreciation, interest, and miscellaneous expense. Of all the items in the cost of manufacturing any article, this is the most important and also the most difficult to estimate correctly. The only sure way in which to get the correct cost for this item is, to figure on a year's production as for superintending and handling. Very few manufacturers know what their mill expense actually is. If they did they would not wonder so much as to what became of the expected profits "which failed to materialize." This item is also subject to considerable variation according to conditions.

We now come to the selling expenses, which are not included in the cost of the goods, owing to the wide variation between different mills. Most mills selling direct, pay a certain percentage of the selling price for selling. In such cases the cost of same is easily found. In mills paying their salesmen straight salaries, the cost of selling may be included under superintending and handling, or may be figured separately, basing the calculation on a year's business. This practically completes the total cost of the goods. As I stated before, while this represents the exact cost of goods if we were to manufacture them in our mill, it is subject to considerable variation in other mills. By substituting the respective prices for mine the exact cost may be obtained for any given mill.

Merrill.

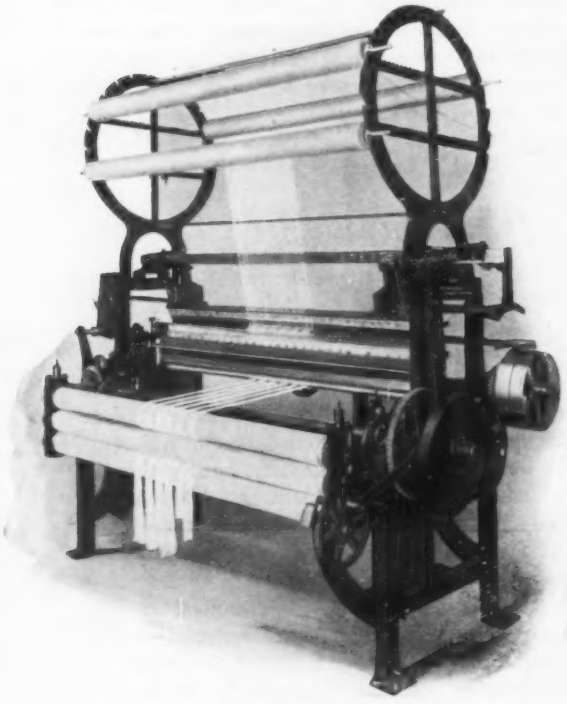
The total exports of raw cotton from China in 1907 amounted to 131,707,731 pounds valued at $13,398,192, against 85,780,750 pounds valued at $6,724,250 in 1908. The Chinese customs valued the haikwan tael at 79 cents in 1907, and at 65 cents in 1908, which accounts for the proportionate share in the decreased value for 1908.

The imports of cotton goods into the Empire of China during the year 1907 amounted to $99,092,524 against $75,836,212 in 1908.

A NEW LACE AND EDGING MACHINE.

The illustration shows a new machine which has just been put on the market by George W. Lindley, 5122 Wakefield St., Germantown, Philadelphia. It is for the manufacture of lace and edgings, trimmings for underwear, etc. It combines a number of new features tending to simplify this process.

The machine is seven feet high to the top of the beam rack, four feet wide and four



A NEW LACE AND EDGING MACHINE.

feet in depth. The principles of its operation have been carefully studied and judgment and care used in its construction, while the material used is the best. The steel, for instance, in making the facing plates is of the highest quality, as well as the bearings. The idea has been to develop a machine which would stand all factory strains, run at high speed and without noise.

The range of patterns that may be made on this machine is almost unlimited. The number of strips that can be made at one time is only limited by the width of the edgings and at the time we saw the machine in operation, over 70 strips were being made at once. It was an interesting sight to see so many strands of yarn leaving the beam rack and traveling in the various channels to the many heads which converted them into so many strips of edgings. It is difficult to convey by description any clear idea of the working of the machine without seeing it and the builder invites any who may be interested to call at his plant and inspect it in operation and obtain whatever information may be desired.

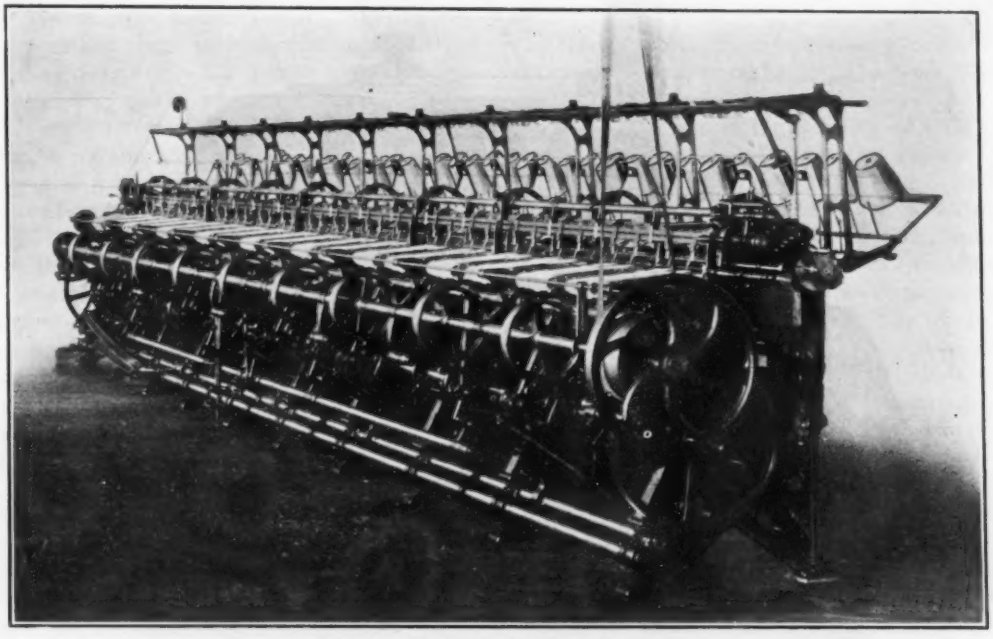
In addition to the manufacture of lace and edgings, it is also adapted to the manufacture of double ribs, such as fancy knit goods, coats, sweaters, shawls, nubias and golf vests, as well as trimmings for same.

Mr. Lindley has had many years' experience in building all kinds of machinery for cardigan jackets, double ribbed machines for fancy goods, and other special machinery, and believes that this, his latest machine, will prove of much interest and practical value to the knit goods trade.

THE RICHTER FULL FASHIONED HOSIERY MACHINE.

The illustration shows the new full fashioned hosiery machine built on the Cotton patent system by Wolfgang Richter, 535 Lawrence St., Philadelphia, Pa. Mr. Richter has been engaged in the building of this class of machinery all his life, having learned the business from his father, who was the pioneer builder of Cotton frames in Germany. After coming to the United States Mr. Richter for a time imported and sold his father's machinery, but has now perfected a machine of his own which embodies many new features. He has eliminated the cast iron rails, using shafts throughout the entire length of the machine. The needle bar and head rail are of the same kind of steel so that they are affected equally by changes of the temperature. The two side

racks for narrowing are simple in construction and much more rigid than in previous machines. Every part of the machine is made on well constructed jigs, ensuring perfect adjustment. The machine is now running in one of the largest mills in Philadelphia and has proved to be successful in every respect. Mr. Richter is making arrangements for increasing the capacity of his works so as to be able to fill orders promptly.



A NEW FULL FASHIONED HOSIERY MACHINE.

During the year 1908 the total purchases of Australian wool in London for the United States amounted to but 49,000 bales, whereas during that year they secured 110,000 bales in the Australian markets.

Homespuns are especially adapted for open-air life and sporting purposes in moist climates; their suitability being especially due to an innate elasticity of the cloth, an admitted advantage for the use of sportsmen who fish, shoot and golf.

SINGER MACHINE NO. 81-3.

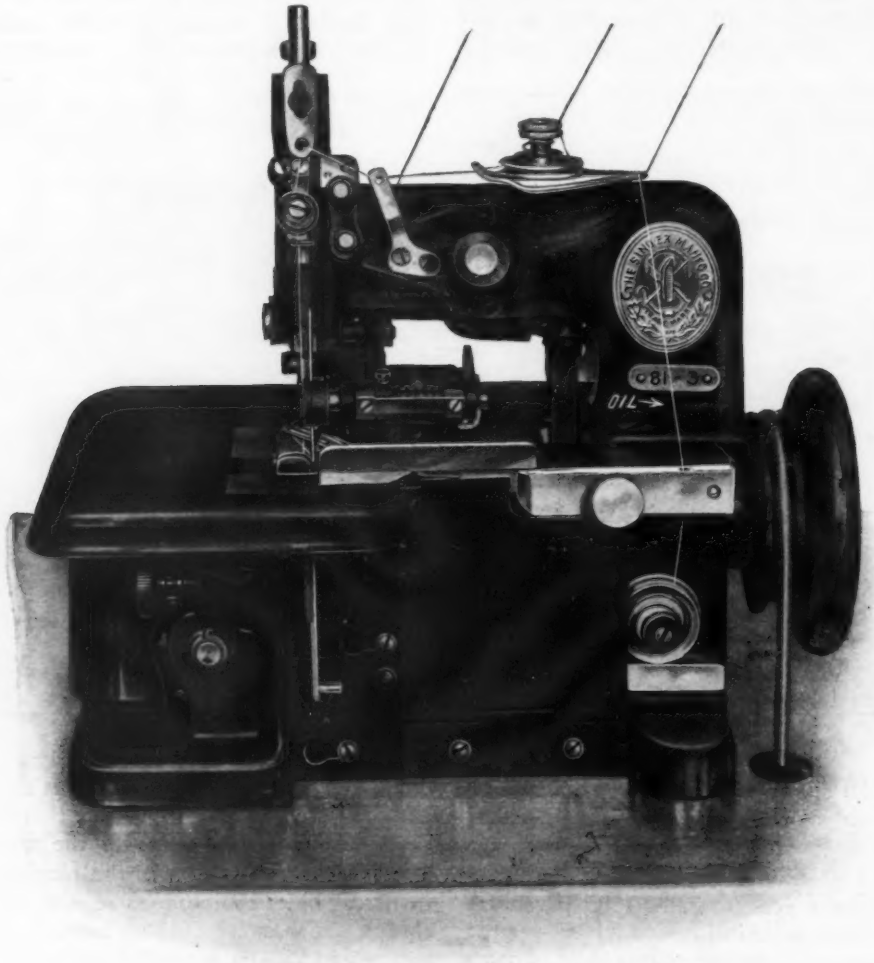
This machine is manufactured by the Singer Sewing Machine Co., Singer Bldg., New York City, for trimming and overedging knit goods, and can be used at the highest practicable speed for all seaming, hemming, putting on cuffs, sewing on borders, edging arm holes, necks, collarettes, and bottoms of garments. It makes a smooth, firm and sightly seam that is entirely finished when it leaves the machine. The few vibrating parts of the machine are small and light, the motions regular and not abrupt, and because of these features a very high speed can be sustained, resulting, it is claimed, in a greater production of good work than any other machine for the same purpose.

The No. 81-3 machine is fitted, unless otherwise ordered, with trimmer, looper and spreader, making the two-thread overedge chainstitch, for trimming, seaming and covering, at one operation, all varieties of knit

garments. It can be fitted, if so ordered, with two loopers and other parts for making a three-thread stitch, forming either a single or a double purl that is especially desirable for making fine edges.

edge. The flattening effect of this feed can be adjusted for different kinds of work by means of an adjusting screw at the back of the machine.

For blind-stitching hems on knit gar-



THE NO. 81-3 SINGER MACHINE.

The trimming device is quickly and easily adjusted so that the bight on the goods can be regulated exactly as desired. The auxiliary feed, with its presser foot acting upon the stitched goods and the seam, serves to bring the work out flat and without a wavy

ments, stockings, etc., on machine No. 81-3, a welt guide can be furnished, the use of which requires a front feed-dog, throat-plate and presser-foot, different from those in the machine as regularly fitted.

To make the two-thread stitch, using a

looper and a spreader, the take-up for the needle thread should be set to the left so as to draw all of the thread on the downward stroke, and the small take-up on the looper-lever should be set to the right, so as to draw most of the thread on the downward stroke. The machine is threaded in the regular way and the tensions adjusted so as to draw the purl to the edge.

To make the single purl stitch, using two loopers and three threads, the needle thread is drawn tightly to the goods, making a firm seam when two pieces are stitched together. A very narrow bight can be used without danger of the seam pulling out. In adjusting the machine for this stitch the needle thread is left out of its take-up, the thread leading directly from the tension bracket to the thread guide on the arm head and a tight tension used; the small take-up on the looper-lever at the left is set to the right so as to draw all the thread on the downward stroke and the tension on the left-hand looper-thread made very light, sufficient tension being used on the right hand looper-thread to bring the purl to the edge.

To make the double purl-stitch, using two loopers and three threads, the machine must be threaded in the regular way, setting the needle-thread take-up so as to draw most of the thread on the downward stroke, using a medium or light tension.

The small take-up on the looper should be set as far as it will go to the shaft, or turned at right angles, thus bringing the hooked portion toward the operator. A tight tension should be used on the left-hand looper-thread. The tension on the right-hand looper-thread must be strong enough to bring the purl to the edge.

The making of a fine handkerchief requires two months' labor, working daily from sunrise to sunset, and this article will sell for about $6 gold. The lace bolero, or, as it is called here, "torero," requires from 4 to 6 months to make. A fine parasol cover cannot be completed within a year, and all this article will bring is about $30 gold.

MAKING KNIT GOODS UNSHRINKABLE.

BY F. W. HERINGTON.

It is after the fulling process that the goods are subjected to the chemical process to render them what is termed unshrinkable. There are several methods used, but perhaps the best known is the chlorine and acid treatment. Chlorine gas, in its commercial state is embodied in what is technically known as chloride of lime, and to obtain free chlorine the following process is necessary: In a wooden vat free from iron or other minerals in the form of nails, screws, etc., dissolve the chloride of lime in clean cold water, breaking the lumps in order to free the chloride or green gas, as it is termed. Do this carefully and when all the gas is liberated by stirring, etc., let it stand for a sufficient length of time to allow the lime to settle. Then the clear water should have a greenish tint. Skim off any floating substance that may have risen to the top and leave it again to settle. It is essential to cover up while settling in order to keep out all dirt. One pound of chloride of lime is added to every 10 gallons of water in the vat.

Acid Treatment for White Goods. First treat in a sulphuric acid bath in an ordinary wooden vat with sufficient water to cover the goods. The temperature of the water is raised to about 170° to 175° F. Use 6 1/2 ounces to every 10 pounds wool goods to be treated. Mix the acid well with the water before putting in the goods, and when the goods are in keep them under the liquor for about 30 minutes, turning occasionally.

Certain yarns of hard spun qualities may be treated as already explained for whites, but in this class of goods color has to be taken into account and it may be necessary to reduce the strength of the sulphuric acid to 5 ounces for every 10 pounds of goods, and also to reduce the temperature to 120° F. For soft woolen goods it is best to use hydrochloric instead of sulphuric acid, treating in the same way as explained. It is impossible to adopt a fixed rule for the strength of the acid, as it must be varied according to qualities, and should in all cases

be sufficient to give the desired effect as to shrinkage without effecting the natural color of the fabrics.

Having treated the goods in the acid bath, take them out and pass through squeezing rollers to extract all excessive moisture, taking care to save the liquor. The acid liquor may be used again by adding acid to bring it to the required strength.

Prepare another bath of water at about 80° F. to cover the goods. Add to this the clear liquor from the chlorine vat, taking care not to disturb the lime in any way. The strength of the chlorine may be taken as an average at 1 pound of chloride of lime for each 10 pounds of goods. One pound of chlorine of lime is used to every 10 gallons of water, which is required for 10 pounds of goods. Keep the goods well under the water for say 15 minutes, with occasional turning. As chlorine in excess will injure the wool fibers, no greater strength than is absolutely necessary to give the results desired should be used and for fine goods often less will be required as the liquor permeates the fabric quicker. Soft woolen yarns require the least strength. Soft spun yarns often require only a mild treatment, but coarse, heavy goods require more than the standard strength.

After taking goods from the chlorine bath, wash out carefully in lukewarm water, adding sufficient soap to clear off any lime remaining. Some goods will require more soap than others to give them the soft feel desired.

Treat dyed goods carefully by reducing the strength of the acid and chlorine liquors, and also the temperature of the baths, leaving the goods in the liquor for a longer time. For delicate colors use a cold hydrochloric acid and chlorine bath. The goods can remain in the liquor for some time until the desired result is obtained.

The goods when taken from the bath should be carefully washed to free them from all lime or other foreign substances that may remain, and well rinsed in lukewarm water, then run through squeezing rollers and extracted.

In drying the goods avoid an excess of heat and have good ventilation, because while moisture remains further chemical action may take place. After the goods leave the drier it is essential that they be damped before pressing. The usual way is to use sheets. These are made of soft woven cloth especially adapted for holding moisture. This is cut into pieces, say 4 feet long by 2 feet wide. They are well saturated with water and left a few minutes for the water to become evenly distributed. Then a sheet is laid straight and as many hose laid on as will lie together without overlapping. Another sheet is then laid over same and another lot of goods placed on it. This is repeated till a sufficient quantity is so laid, then they are turned over, taken out and another lot damped.

AN IMPROVED LATCH NEEDLE.

This needle construction, recently patented by Robert W. Scott, is described by the inventor as follows: The object is to construct a latch needle for knitting machines so as to prevent the loosening of the rivet by which the latch is hung to the slotted shank of the needle, and prevent the cutting or tearing of the yarn by the projecting end or ends.

Fig. 1 is a vertical sectional view, on an enlarged scale, of the upper portion of a latch needle constructed in accordance with the invention; Fig. 2 is a horizontal section on the line a—a, Fig. 1; Figs. 3 and 4 are vertical sectional views illustrating other embodiments of the invention.

The latch is pivoted to the needle by means of a rivet passing through openings in the walls of the slot and through an opening at the butt end of the latch, the ends of this rivet being swaged or expanded so that it serves not only as a pivot for the latch, but also, under normal working conditions, to retain in place the walls of the slot. In the operation of the machine lateral pressure is sometimes exerted upon the projecting portion of the latch, as by knots or enlargements upon the knitting yarn, which causes the walls of the slot to spread and

thereby stretch or loosen the rivet, so that the latter projects at one or both ends beyond the walls when the latter assume their normal position. Such projecting portion of the rivet has a cutting or tearing effect upon the yarn.

The slot for the reception of the latch must extend completely through the shank of the needle in order to provide clearance for the particles of lint which enter the slot and which, in the absence of such clearance would accumulate in the slot and in time in-

FIG. 4.

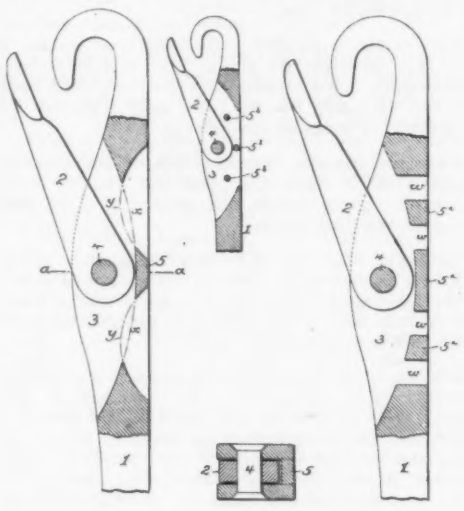


FIG. 1. FIG. 2. FIG. 3.

terfere with the proper operation of the latch. Ordinarily the slot is formed in the needle shank by means of a saw or like cutting tool forming a kerf extending completely through the shank. By the new method a kerf is formed in the front of the shank and does not extend completely through said shank as indicated by the dotted lines, x, in Fig. 1. In order to provide the proper clearance, kerfs are formed in the back of the shank as indicated by the dotted lines, y, in Fig. 1; these kerfs are of such size and so located as to leave a body of metal, 15, in the slot at the back, and immediately behind the pivot end of the latch. This metal constitutes a bridge integral with the side walls of the slot and prevents lateral deflection of the side walls by any pressure such as may be caused by the strain exerted upon the outer projecting portion of the latch, the rivet being relieved from any strain which would loosen it or cause its ends to project beyond the sides of the needle.

Instead of forming in the back of the slotted portion of the needle shank upper and lower saw kerfs such as shown at y in Fig. 1, a series of openings are formed through the body of metal at the back of the slot, as indicated at w, Fig. 3, so as to provide bridges, 5a, connecting the side walls of the slot, these openings being so located that one of the bridges will be directly in the rear of the pivoted end of the latch.

New Plant for Friedberger-Aaron Mfg. Co.

The record growth in the underwear business has taxed to the utmost capacity the plant of the Friedberger-Aaron Mfg. Co., of Germantown, Pa., whose business of supplying this trade with edgings, trimmings and braids has assumed very large proportions.

In order to meet the present demands and adequately provide for the future, far-reaching plans have been consummated which will provide for a very large addition to their capacity. Three and one-half acres of land have been purchased at the N. E. corner of 18th and Cortlandt Streets, directly opposite the new Stenton Park, This is easy of access by trolley and only two minutes from Wayne Junction Station. Besides being a good business location, it has historical interest, as the old mansion of James Logan, secretary to William Penn, is situated on the park opposite.

The contract has been awarded for a three-story reinforced concrete building, 62 by 350 ft., embodying modern ideas, the floors being almost entirely free from pillars and posts and the roof supported by arched trusses. A separate power plant will be built. The mill proper is to be equipped with electric drives. The contracts involve a cost of upwards of $300,000 and the plans are such that further additions can be made in harmony with the rest of the building.

Work is being vigorously pushed and it is hoped that the plant will be occupied by July, 1910. It is probable that their Wakefield St. mill may be discontinued and a portion of the equipment at the 18th and Fisher's Lane mill removed to the new plant.

The present officers of the Friedberger-Aaron Mfg. Co. are J. F. Eshner, president; Max N. Aaron, vice-president and general manager, Edwin M. Goldsmith, secretary and treasurer, and Joseph K. Stone, selling agent.

Since Mr. Aaron has been the manager of the business it has expanded rapidly under his vigorous and progressive direction.

KNITTING MILL NEWS.

*Ohio, Dayton. Preparations are being made by the new National Knitting Works Co. to manufacture a line of juvenile sweaters. They plan eventually to manufacture coat sweaters, mufflers, toques and knitted specialties, but have decided that they are a little late in the season and are contracting for other mills to supply these goods for the present. The capital stock is $50,000. J. H. Goldberg is president and treasurer; A. Goldberg, vice-president; and D. W. Johannesberg, secretary. J. H. Goldberg and Mr. Johannesberg attend to the buying. These men are connected with the Miami Clothing Mfg. Co. of Dayton, O., manufacturers of white duck clothing, etc., and will install their knitting machinery in the building in which the latter concern's plant is located.

Pennsylvania, Doylestown. The Philadelphia Knitting Co., a new concern, with offices at 4th and Market Sts., Philadelphia, have ordered machinery for the equipment of a knitting mill in which they will manufacture a line of fine knitted silk neckties.

Pennsylvania, Fleetwood. A new hosiery mill, 32 by 50 ft., of brick, two stories and basement, is nearing completion and will soon be occupied by the Ritter Hosiery Co. They expect to start their operations about January 1 on cotton half hose, 200-needle goods, with 12 George D. Mayo latest improved knitters, 2 Wildman ribbers, 2 German loopers. The goods will be sold by Berlin Bros., New York. Frank R. Ritter, the manager, was head knitter with D. F. Kelchener for eight years. The building is L-shaped, the wing, which is 1 story of brick is used as the engine and boiler house. The power will be furnished by a 20 h. p. engine and 45 h. p. boiler. The members of the company are Frank R. Ritter, Howard M. Ritter and Charles L. Ritter.

Pennsylvania, Hamburg. Burkey Bros. have purchased a site at Shoemakersville, Pa., on which they will erect a plant for the manufacture of cotton underwear.

*Pennsylvania, Harrisburg. A charter has been granted the Moorhead Knitting Co., Inc., and they are at the present time erecting a new mill building which will be four stories, of brick, 38 by 50 feet. They held an election the middle of December and the following officers were elected: J. W. Bowman, president; E. S. Herman, vice-president, and R. W. Moorhead, secretary and treasurer. They will manufacture seamless cotton half hose and have installed Banner knitters, Grosser Mch. Co. German loopers and Wildman ribbers. The plant will be operated by electricity and they expect to start on or about February 1.

Pennsylvania, Mohnton. J. J. Eshelman & Co. is the name of a new concern which has started up a plant for the manufacture of seamless half hose. The plant was started up by them on October 1 with 10 George D. Mayo knitters, 2 Wildman ribbers and Hepworth loopers.

Enlargements and Improvements.

Canada, Ontario, Woodstock. J. N. Greenshield and C. R. Whitehead, who control the company which will build the new mill at Shawinigan Falls, and are also interested in the Wabasso Cotton Co., Ltd., of Montreal, have secured control of the Oxford Knitting Co. The plant will be increased.

Canada, Ontario, Hamilton. The Eagle Knitting Co., Ltd., propose to extend their business and make important changes which will include the associated industry, the Eagle Spinning Mills, Ltd. At present a large addition is being built to the plant at the corner of King St. and Sanford Ave. In the future the business will be carried on under the name of a new company capitalized at $1,000,000, which will be known as J. R. Moodie & Sons, Ltd. Incorporation under the new name is being applied for.

*Connecticut, Shelton. Building operations at the plant of Radcliffe Bros., Inc., will be started immediately. No intelligent estimate of the damage can be made, but the previously reported loss of $95,000 is probably excessive.

*Georgia, Macon. Stockholders of the Southern Hosiery Mills have approved the plan to issue $30,000 worth of bonds, the proceeds to be used for doubling their plant.

*Georgia, Marietta. Changes being made by the Marietta Knitting Co. consist of the installation of a few finer gauge machines. Some of the old machines will be set aside for the present to make space for the new machinery.

Illinois, Chester. Additional machinery has been installed in the plant of J. H. Richman & Co., Sparta, Ill., controlled by the Chester Knitting Mills, and the directors are reported to be considering the erection of an additional building at the Chester plant. Several months ago the capital stock was increased to $40,000 to finance these enlargements.

Illinois, Chicago. After January 1 the Empire Knitting Mills, now located at 221 Fifth Ave., will remove to 314-16 Superior St. They state the present capacity will be greatly enlarged and employment given to 35 hands.

*Illinois, Mt. Vernon. A new dyeing and finishing department will be equipped by the Illinois Knitting Co., the new concern which has taken over the local plant of the National Hosiery & Yarn Co., as noted.

Pennsylvania, Hamburg. The Hamburg Knitting Mills, of which Thomas H. Robinhold is the superintendent, are extremely busy on women's cotton ribbed underwear. In addition to adding a number of new knitters and sewing machines, they have also had erected a new mill, two stories and basement, 36 by 70 ft., and a bleachery, 36 by 68 ft., in which they have installed the latest improved machinery for bleaching purposes.

Pennsylvania, Harrisburg. A new 3-story mill, 200 by 60 ft., will be built for the Wellknit Hosiery

Co. in the spring at a cost of approximately $40,000.

Pennsylvania, Mohnton. William G. Leininger is running his machinery full time in turning out his orders on 144-needle hosiery and has increased his machinery at both the main mill and the branch plant at Fleetwood.

Pennsylvania, Mohnton. A. S. Hornberger & Co., of the Mohnton Knitting Mills, have put in additional machinery consisting of sewing machines and ribbers. In their woman's Swiss ribbed underwear department they are quite busy and are fairly active in their seamless hosiery department.

Pennsylvania, Mohnton. The Electric Hosiery Co., John C. Richwein, pres.; H. J. Bigony, treas., and Chas. S. Richwein, supt., have put in additional knitting machinery and are running steadily on their 144-needle cotton half hose.

Pennsylvania, Nazareth. The Kraemer Hosiery Co. are doing a steady business on their assortment of women's full fashioned and ribbed cotton hosiery. They have quite recently increased their machinery by adding 40 knitters and 20 ribbers. The officers of the company are A. G. Schmidt, president and manager; and C. W. Schmidt, treasurer.

Pennsylvania, Nazareth. The Nazareth Knitting Mills have quite recently put in a 50 h. p. boiler and a 35 h. p. engine, which they have installed in a one-story brick building which they had built for this purpose. In addition to their line of 144-needle goods they had added a line of 176-needle hosiery. They have also put in some new George D. Mayo knitters and Wildman ribbers.

Pennsylvania, Pottsville. Fred. H. Miller of the Pottsville Knitting Mills, who manufactures a line of women's cotton ribbed vests and children's knit wrappers, is changing his plant over from heavy to light weights and reports a fair business.

Pennsylvania, Reading. It has been necessary for the H. V. Wentzel Knitting Mills, 753 Cherry St., to increase their machinery by installing 16 sewing machines to enable them to complete orders on hand. They manufacture a general line of knit goods in cotton, wool and silk.

Pennsylvania, Robesonia. The I. X. L. Hosiery Mills, of which H. W. Sheeler is the proprietor, manufacturing seamless half hose, 174 and 176-needle goods, have been very busy since June last, and it has been necessary to run extra time for several months. Sixteen Banner knitters and 4 Brinton ribbers have just been added to the plant to enable them to keep up with their orders.

Pennsylvania, Robesonia. The Robesonia Knitting Mills will install 20 more, which will enable them to increase their production of cotton seamless half hose.

Pennsylvania, Royersford. In the spring the National Underwear Co. of Spring City will build a 4-story mill in Royersford, 65 by 108 ft. The plant at Spring City will be removed into the new building on its completion and the capacity greatly increased.

Pennsylvania, Schuylkill Haven. The Thomas Knitting Mills, which were shut down for a week during December in order that they might repair their machinery, etc., have been started up again. They report business as being very good on their line of children's cotton ribbed underwear. They have in contemplation the installation of more machinery within a short time.

Pennsylvania, Schuylkill Haven. Darius D. Coldren reports that trade is very active on his line of women's and children's cotton ribbed underwear and he has in contemplation the enlargement of his present building and the installation of sufficient machines to triple the size of the plant.

Pennsylvania, Schuylkill Haven. The mechanical equipment of the Champion Knitting Mills, of which J. E. Stanton is the proprietor, has been increased to enable him to get out his production of women's and children's cotton ribbed underwear.

Pennsylvania, Shillington. Martin H. Fritz, proprietor of the Shillington Hosiery Mills, has increased his machinery to enable him to fill his orders on his line of seamless hosiery, both cotton and merino. He dyes and finishes his production and sells direct and through agents.

Pennsylvania, Temple. One of the best equipped knitting plants in this section is the new mill just completed for the Maiden Creek Hosiery Co. The building is of brick, two stories and basement, 32 by 80 feet, and is well built in every particular. The power for the plant is furnished by a 40 h. p. engine, 50 h. p. boiler, and they have a dynamo with which to furnish their own light. The second floor is used as the knitting department, first floor for packing, shipping and office purposes, and the basement for finishing. The officers of the company are: President, Mahlon L. Seidel; treasurer, R. L. Seidel; and C. L. Seidel, secretary and buyer. The production of the plant is sold through P. J. Quinlan, New York and direct. They expect to put in additional machinery in the spring of the coming year. They manufacture men's and infants' cotton, lisle, mercerized and fancy hosiery.

Pennsylvania, York. Great changes have taken place in the York Knitting Mills, Inc. They have increased their machinery, on which they manufacture a full line of domestic hosiery, 108, 200 and 220-needle goods. W. F. Bay Stewart is the president; J. T. Kopp, treasurer, and J. T. Kopp, Jr., general manager and buyer. They sell their goods direct and the new machinery which has been added consists of Standard knitters, Hepworth loopers and Brinton ribbers.

Rhode Island, Providence. Some machinery is being installed in the new mill of Geo. E. Boyden & Son. Some of the departments of the British Hosiery Co. of Thornton will be removed to the new building next month, but owing to the necessity of not reducing the output the plant at Thornton may be operated for at least a year.

New Machinery and Processes.

This department is designed to present from month to month a brief mention of new machinery, devices and processes being brought out in this country and abroad, that are of interest to textile manufacturers. It is not a list of patents, but of improvements coming on the market. The idea being to present to our readers a systematic monthly record of new machinery, etc., of interest to textile mill men.

Whenever possible we endeavor to make a personal investigation of the new machinery and processes described in this department. In the absence of such personal investigation we must necessarily rely upon information obtained from those who control the machines and processes.

We invite machine builders and others to send us such information for this department.

Full Fashioned Hosiery Machine. Wolfgang Richter, 535 Lawrence St., Philadelphia, Pa. A full fashioned machine for knitting hosiery, an account of which appears in another part of this issue.

A Tandem Fulling Mill. L. H. A. Schwartz & Co., 53 State St., Boston, Mass. A fulling mill in which two sets of rolls are arranged in tandem. A description of this machine will be found in this issue.

Spinning Ring. The Automatic Spinning Ring Co., Boston, Mass., is putting on the market a new ring which is the invention of F. H. Chapman and is designed to obviate the use of separators and insure even tension on the yarn from empty to full bobbins.

Hard Waste Preparing Machine. Wm. Tatham & Co., Rochdale, England. A machine for breaking up hard waste, putting it in condition for reworking. It is claimed that the new machine cleans the stock much better than heretofore and dispenses with the preparatory willowing operation.

Designing Patterns. Julius Mayer, Freudenthal, Austria. A machine for transferring and enlarging weave patterns on design paper.

Yarn Dryer. Paul Turlur, Wattrelos, France. A machine specially adapted for drying sized yarn and which, it is stated, is capable of a very large production.

Mercerizing Machine. Julius Matter, Laaken, Germany. An apparatus for rinsing mercerized yarn, the alkali being reclaimed.

Dyeing Machine. Carl Wolf, Schweinsburg, Germany. A machine for dyeing and bleaching yarn on cops by the circulating system. Means are provided for reversing the current as desired.

Moistening Yarn. B. Cohnen, Grevenbroich, Germany. A machine for moistening cotton and worsted yarn either on spools or in the skein. It is claimed that the yarn is moistened uniformly and that the degree of humidity can be very closely regulated.

Dobby Motion. James Hill & Son, Eagle Works, Keighley, England. An improved dobby motion which, although embodying no radical changes in construction, has been designed to give durability, simplicity and a wide range of work.

Cloth Measuring Machine. Freidrich Erdmann, Gera, Germany. The cloth passes over a table on which rests a measuring wheel connected by gearing with a counting device that indicates the length.

Lustering Machine. Joh. Kleinewefers, Krefeld, Germany. An improved machine for imparting a high luster to yarn, whether mercerized or not.

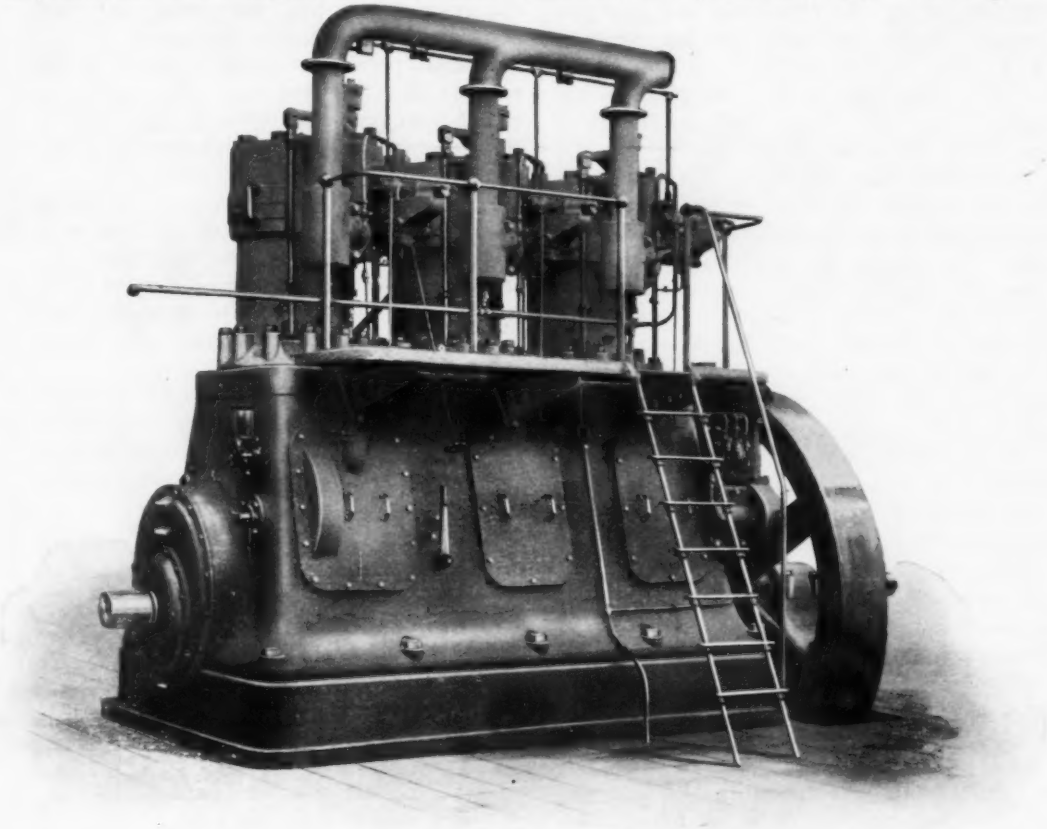
Knitting Patterns. Ernst Traenker, Stollberg, Germany. A device for producing colored patterns on a circular knitting machine.

Rope Coupler. Kenworthy & Co., Ashton-under-Lyne, England. A device for coupling the ends of driving ropes. The hook and eye are dispensed with, a ball and a knuckle joint being used instead.

Lock for Carding Machines. Richard and Fred Law, Rochdale, England. A locking device for the cylinder covers of carding machines. A number of cards have been fitted with this attachment in Rochdale where it is stated it is giving satisfaction.

ONE HUNDRED H. P. PER HOUR FROM SIX AND ONE-HALF GALLONS OF CRUDE OIL.

The many friends of the Diesel engine have been much pleased to learn that the patent rights, good-will and all the assets of the American Diesel Engine Co. have been purchased by Adolphus Busch of St. Louis.



THE AMERICAN DIESEL ENGINE.

When the Diesel engine was introduced to the American market a few years ago, its reputation abroad had already preceded it and a number of large power equipments were installed in the United States which have now been in operation long enough to demonstrate its wonderful fuel economy. There are more than 350,000 h. p. in operation in the world and nearly 30,000 h. p. in the United States, and the results have shown that if the operating instructions are followed, 6 1/2 gallons of crude or fuel oil are sufficient to develop 100 b. h. p. per hour when running anywhere between full and half load.

The International Time Recording Co. of Endicott, N. Y., who have used a 120 h. p. Diesel engine for about four years, wrote Mr. Busch, on hearing of his purchase: "Its economy is wonderful, its mechanism all right, and when properly put before the people you could scarcely find a shop large enough to manufacture the number they would require.

The Diesel engine uses fuel oil, that is, crude oils and their residual products, which usually sell for less than 3 cents per gallon delivered to the consumer. No boilers are

required, consequently no smoke, no ashes to be gotten rid of, and no fires to be kept up overnight and Sunday. It starts instantly when wanted, can be closely regulated and there being no explosions, no igniters are used. It is sold under a fuel guarantee not to exceed eight gallons when running at any load between half load and rated capacity for each 100 net effective h. p. hours (b. h. p. hours).

This guarantee covers every piece of apparatus necessary to produce power which an ordinary plant would require for the most satisfactory operation. No fuel needs to be burned without producing its full equivalent in power available for effective use. The engine starts on the opening of the valve and the fuel consumption ceases the minute it has completed the desired run.

The Diesel principle of ignition and combustion differs radically from all other methods. The cycle consists of four strokes, as is usual with the best internal combustion engines, but there the similarity ceases. There are several distinguishing features: The engine compresses air only, to a predetermined temperature above the firing point of the fuel. This fuel is blown as a cloud of vapor (by air from a separate small compressor) into the cylinder when compression has been completed, ignites spontaneously without explosion, solely by reason of the heat of the air generated by the compression, and burns steadily with no essential rise in pressure. The engine can never fail to ignite and the temperature of gases, developed and rejected, is much lower than with engines of the explosive type.

The American Diesel engines are built in three cylinder units and may be connected in pairs to form six cylinder engines, which are much in favor where exceptional smoothness and regularity of operation are desired. The design is of the compact vertical enclosed crank case type, but has special features of great value, suggested and developed by long experience both in this country and in Europe.

The air compressor is of standard construction, and can be driven by the engine or other convenient means. It serves only to pump the air for oil injection and to store a surplus in tanks for starting the engine when cold, for which purpose one charge is sufficient. The rated power of the engine is the net power available in the crank shaft, after deducting the power required to drive the compressor, and the guaranteed fuel consumption is based on this power.

A small petroleum pump mounted on the engine lifts the fuel into the atomizing chamber in quantities directly regulated by the governor and nicely proportioned in the load.

Lubrication of all parts within the crank case is taken care of by oil splashed over them by the rotation of the crank webs, and attendance for this purpose is thus cut down to the very lowest amount. A forced feed oiler and a few cups complete the lubricating system.

The fuel economy claimed for the Diesel engine is strikingly shown in comparison with what costs of other fuel would have to be in order to produce equal results with different motive power:

Steam: Non-condensing, coal 39 cents per ton, oil 4/10 cents per gallon, wood 16 cents per cord.

Steam: Condensing, coal 62 cents per ton, oil 6/10 cents per gallon, wood 25 cents per cord.

Gas: Natural gas of 1,000 B. t. u. 9 cents, city gas of 6,000 B. t. u. 12 cents per 1,000 cubic feet.

Gas: Producer gas with hard coal $2.10, soft coal 72 cents per ton.

Electricity: Current at 1/2 cent per k. w. hour.

Water: Supply at $9.75 per water h. p. year.

Gasoline: Fuel at 2 cents per gallon.

A number of electric lighting plants, pumping stations and large mining establishments have been equipped with the Diesel engine and many industrial plants, among which are some textile mills, viz.: The Kent Mfg. Co. (Worsted Mills), Clifton Heights, Pa., the Grinnell Cotton Mills at New Bedford, Mass. (450 h. p.), the

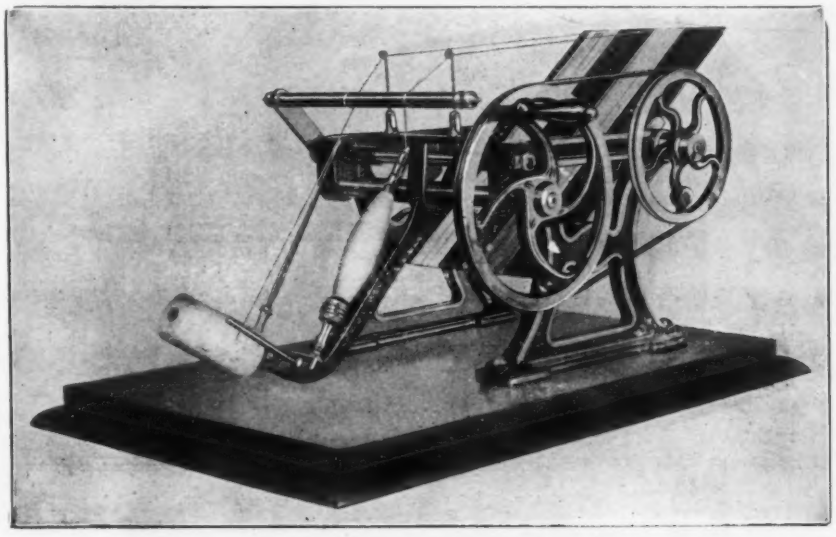
Grant Yarn Co. of Fitchburg, who bought one engine and after using it for several weeks were so well satisfied with the fuel economy secured that they have signed a contract for a second engine. The Samson Cordage Works at Shirley, Mass., bought two 225 h. p. Diesel engines in 1906, and after satisfactory results procured from same have recently purchased two more which are now being installed in the same plant direct connected to a 300 k. w. AC. General Electric generator.

The builders are especially gratified with an order received from the Gillette Safety Razor Co. to install 450 h. p. Diesel engine in the model plant they are building in Newark, N. J. Their consulting engineer, Dr. Leonard Waldo of New York, after making a thorough investigation, recommended the Diesel engine.

It is Mr. Busch's intention in the near future to organize a company to conduct the business. In the meantime, it is operated under the name of Adolphus Busch, purchaser of the American Diesel Engine Co., with offices in the South Side Bank Bldg., St. Louis, and they are now in a position to fill orders with reasonable promptness.

A YARN INSPECTING MACHINE.

The yarn inspector shown in the accompanying illustration is manufactured by Henry L. Scott & Co., 227 Eddy St., Providence, R. I., and consists of an iron frame carrying a guide screw spindle and thread guide, the latter being moved horizontally by a crank on the spindle. The bobbins filled with yarn are placed on the carriage and the thread passed through the eyelets of the guide and fastened to the edge of a blackboard which is revolved by means of a connecting belt. The yarn is wound parallel and with the layers placed at regular intervals on the board.



A YARN INSPECTING AND TESTING MACHINE.

The contrast between the yarn and the blackboard makes it possible to detect any inequality in the yarn at a glance. If desired, two samples of yarn can be wound on the same board, enabling a comparison of their relative uniformity to be made under very favorable conditions. The board can be removed and another substituted by removing two screws in the metal holders. Twelve boards are furnished with each machine.

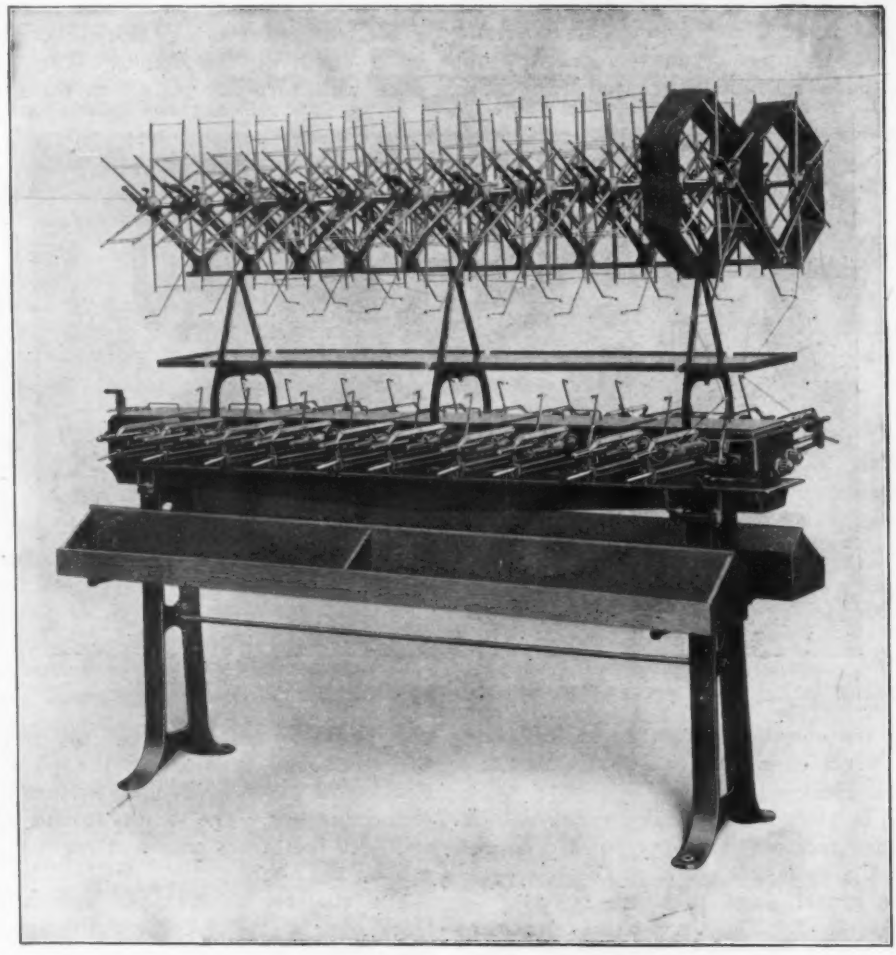
The experienced manufacturer will at once recognize how useful such a testing

machine will prove to be. For example, in the case of yarns of the same color, but made of different wool, a comparison of the two on the board will disclose a difference in diameter even though the yarns are of the same number and twist. Further information can be obtained of the builders.

The total wool production of the United States for 1909 is estimated at 328,110,749 pounds, an increase of 6,863,137 pounds over the year preceding. The total value of the wool clip of 1909 as estimated on the price in Boston is $88,829,746, as compared with a value of $61,707,516 for 1908.

"NO. 90 UNIVERSAL" BOBBIN WINDER.

The adaptation of a machine to its various uses in mill practice often involves much time and expense, and a machine intended to perform different functions should be made so that it can be changed quickly and by simple means to accomplish its various purposes.



THE "NO. 90" UNIVERSAL BOBBIN WINDER.

The aim of the Universal Winding Company has been to make their machines cover as wide a range of work as possible, and by making all parts of the machines interchangeable, reduce to a minimum the cost

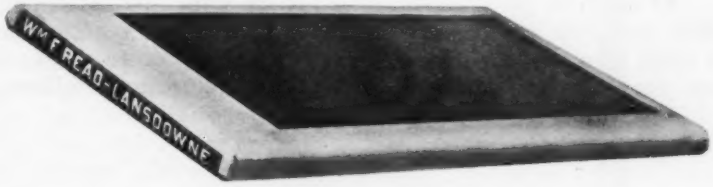
of changing from one class of work to another

The No. 90 bobbin winder, with attachments for winding from skeins, as shown in the accompanying cut, illustrates the final steps taken to adapt that machine to its varied uses in winding shuttle bobbins and cops.

The construction of the skein holder is such that it is easy to operate, is always under control to prevent over-running, and delivers from the skeins to the high speed winding spindle with perfect uniformity. The skein controller consists of a sensitive spring arm connected with a friction device which rests on the hub of the swift when the winding spindle is stopped, thus preventing over-running. When the winding process is started the spring lever is depressed and releases the friction from the swift, allowing it to rotate freely. The depression of the spring lever is also utilized to give a forward movement to the swift before any yarn is drawn from the skein. By means of this starting movement of the skein, independent of the drawing of the yarn, it is possible to start the winding spindle at a high speed on the finest yarn or silk without straining or stretching the yarn. This new and novel feature applied to skein winding, provides for handling of the very fine and soft yarn, which it has been necessary heretofore to wind by slower process from skeins to spools and then go through the process of rewinding. The value of this machine in the market appears to be recognized, as the Universal Winding Co., 95 South St., Boston, Mass., report orders quite in excess of their present capacity for manufacture.

CLOTH BOARDS AS A MEANS OF IDENTIFICATION.

A manufacturer of cotton goods of a brand well known throughout the trade as a standard, was persuaded by an advertising man to make a tour of the large retail establishments in his own city to see if his goods were kept in stock and were known by name by the clerks. In each of these stores he asked for his goods by name and except in one instance was either informed by the clerk that they were kept and goods which were not his own pulled down and shown to him, or else the clerk was not sure, but thought that the line they carried was the one asked for; if not, it was just as good or better.



CLOTH BOARD WITH ENDS PAPERED AND STAMPED.

This manufacturer, of course, knew his own goods, but they were not identified or marked in any way and only those thoroughly familiar as experts would have been able to dispute the clerks' claim that the fabrics were the ones desired. The average shopper would not know. He gave the matter considerable thought and finally concluded that a simple way of identifying his goods would be to use a cloth board of which the end could be papered with some distinctive color and his trade mark name printed on it. Such a cloth board would involve no change in the existing methods of rolling and packaging the goods. Several mills are doing this, among them the Pacific for their "Serpentine Crepe," and W. F. Read for "Lansdowne Fabrics."

A board recently put on the market by Chaffee Brothers Co., Oxford, Mass., seems

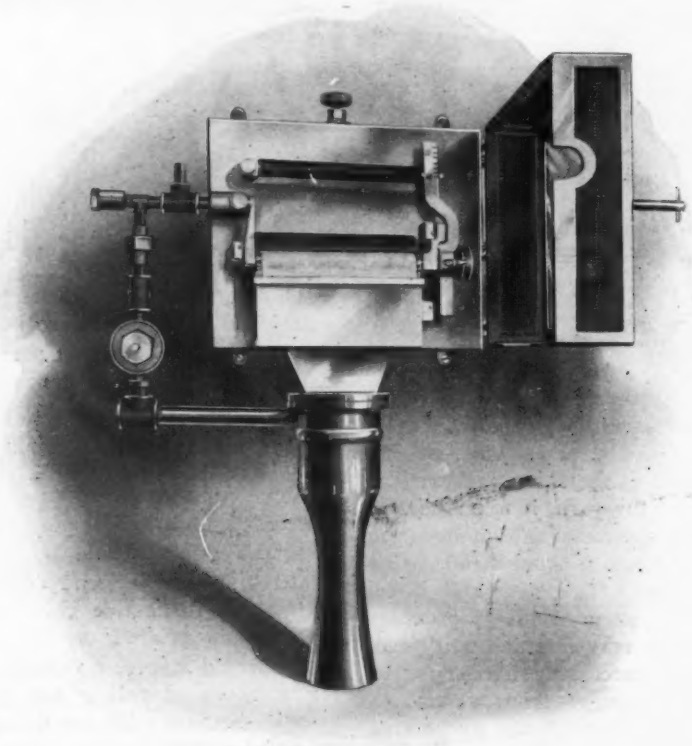
to fulfill the requirements. It is a modification of their patent board which is made of paper and wood and needs no covering. These special advertising boards are made a trifle longer to show the ends plainly when on the shelves of the retailer. The ends are attractively papered and stamped with the desired identification mark, which can be plainly seen by the purchaser of the goods.

UNIFORM HUMIDITY CONDITIONS FOR MILLS.

BY J. I. LYLE.

A short while ago, the writer received some records taken by a mill engineer in a spinning room for 19 days during the months of July and August. This room was equipped with a hand controlled system of humidifying, and it was desired to maintain the humidity at 50 per cent. The records covered 12 hours each day, giving a total record of 228 hours. There were only 120 hours in which the humidity was within 5 percent. of that desired; that is, between 45 and 55 per cent. There was one whole day when it ran from 68 down to 60 per cent., never going below the latter figure. The next day it began in the morning at 50 per cent. and decreased throughout the day, ending at 35 per cent.

There were changes during a single day from 50 to 25 per cent., and in two succeeding days from 60 to 36 per cent., although the temperature and weather conditions outside were remarkably constant during these two days. There were only two days out of



THE NEW FORM OF THE CARRIER DIFFERENTIAL HYGROSTAT.

the nineteen in which the humidity of the mill remained all day between 45 and 55 per cent.

To a good mill manager, who stops to consider this matter, no argument is required to show the desirability of some good, simple method of automatically controlling humidity. In most mills, the overseer looks after the regulation of the humidifiers, which results in his giving the valve a turn one way or the other when he thinks of looking at the hygrometer and finds it is too high or too low. If a humidifying system is of sufficient size to give the desired humidity in extreme weather, then it has an excess capacity for all moderate weather. If it is hand controlled, in not less than nine cases out of ten, it will be closed off too much or not enough. The differential hygrostat will turn the system on or off as indicated by the requirements.

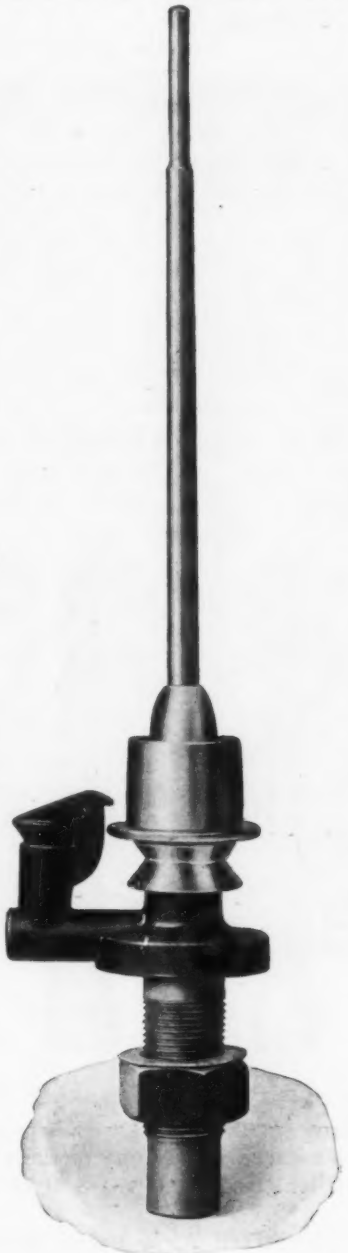
A year ago we described the Carrier differential hygrostat, an instrument made by the Carrier Air Conditioning Co. of America, of 39 Cortlandt St., New York, for automatically controlling relative humidity. We show here a new form of this instrument which was first made in January, 1909, and which has been tested thoroughly in mills during the past year.

One of the first of these instruments made in the present form was installed last spring in one of the largest New England cotton mills and used for the control of turbo humidifiers. This instrument has given excellent control. The instrument, as will be noted from the cut, is extremely simple, but it is scientifically correct. There are two expanding elements and one small operating valve. One of the expanding elements is subjected to the dry bulb temperature of the room and the other to the wet bulb temperature. The instrument will increase the efficiency of any humidifying system, as it will control better than is possible by hand. even if the operator gave his undivided attention to this work.

During the year 1907 the United Kingdom produced 7,029,622,000 yards of cotton cloth valued at $409,270,000.

THE CHAPMAN GRAVITY SPINDLE.

This new spindle now being introduced by the Chapman Gravity Spindle Co., of Winchester, Mass., is of ball bearing con-



THE CHAPMAN GRAVITY SPINDLE.

struction. The balls run on hardened steel surfaces properly lubricated. The step is contained in a spring tube, which, it is claimed, allows the spindle to center up under an unbalanced bobbin through the action of gravity.

It is claimed that this feature does away with any vibratory shock which might tend to loosen the bobbin and that the lack of friction allows the spindle to run at full speed with an extremely slack band.

The saving of power is the most important claim made for this spindle through the elimination of a large percentage of spindle friction, amounting in the case of a good sized mill to a large amount.

A building is being erected in Winchester for the manufacture of the spindles and other specialties.

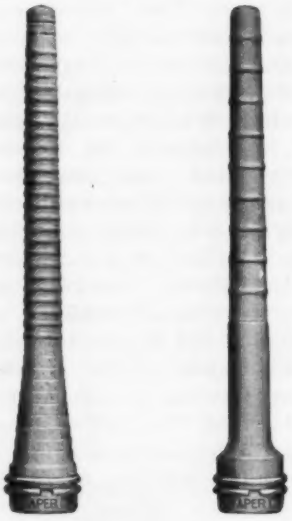
BOBBINS FOR NORTHROP LOOMS.

Eight patterns of Northrop filling bobbins most frequently used are shown in the

A B

accompanying illustrations. Either pattern can be furnished in any one of the regular standard lengths, 6 3/4, 7 3/8, 8 or 8 3/4 inches.

Patterns marked A, E and G are feeler bobbins with the long step used with feeler and have three rings each. The Draper Co.



D

also make the long step bobbin with two rings, in place of cone bobbin for certain

E F

customers, see D; and three ring cone bobbins for others, see B.

Most mills using coarse filling prefer bobbins with steps on the barrel as in E,

rather than the grooves as shown in A, B and G. The importance of using only the best quality of filling bobbins cannot be too strongly emphasized. The Draper Co. have at large expense fitted up a plant for manufacturing Northrop loom bobbins so as to

G H

insure their customers the best quality of goods and at the same time give reasonably prompt deliveries.

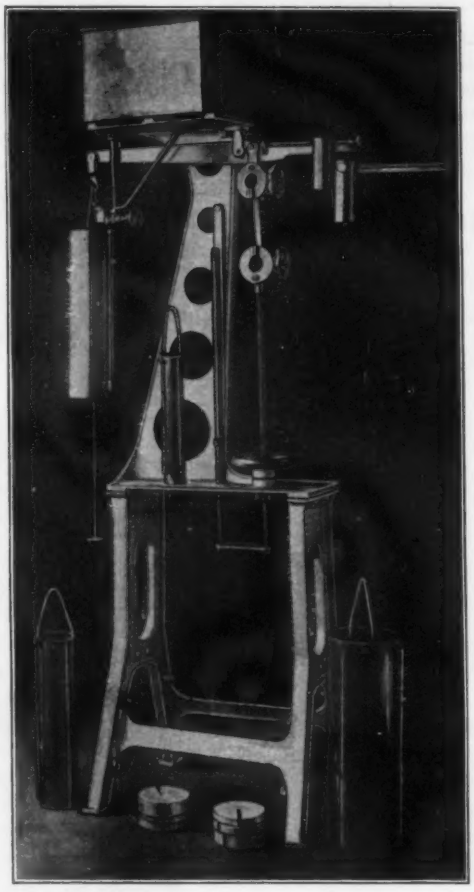
It is evident that no other makers of bobbins can have the same incentive in furnishing the best bobbins for this purpose. Two recent complaints of breakage of shuttle springs were directly traced to bobbins with rings and butts too large, and which were not made by the Draper Co.

In another case feeler bobbins were made so that the looms produced such an excessive amount of waste that the bobbins had to be destroyed. This customer sent the Draper Co. an order to replace the defective bobbins, stating that one such lesson was enough.

Woolen and worsted factories in the United Kingdom employed in 1907 247,920 wage earners and 9,097 salaried persons; the net output per person was valued at $380.

HYDRAULIC TESTING MACHINE.

This machine, which is manufactured by Charles H. Knapp, Wait and Rye Sts., Paterson, N. J., is operated by water flowing from a tank into a can hung on the scale



beam. The cloth or other material to be tested is fastened between the jaws, the can hung on the scale beam, and the beam balanced. The lower jaw is connected by a screw operated by a hand wheel. This is turned until the material is tight enough to move the beam. The length of the goods between the jaws is indicated on the sliding bar at the left of the screw. The valve is now opened to let the water flow into the

can on the scale beam. As the can fills up the scale beam is kept level by turning the hand wheel. When the sample breaks the water is automatically shut off. The can is provided with a water gauge on which is a scale indicating the weight of the water in pounds. The level of the water thus indicates the power required to break the goods.

The elasticity is indicated on an upright scale at the left of the screw. As the stream of water is the same at all times the conditions are maintained uniform in all tests. Further information can be obtained on application to the manufacturer.

THE PAUL KLUG TANDEM FULLING MILL.

The fulling mill shown in the accompanying illustrations is being introduced in the United States by L. H. A. Schwartz & Co., 53 State St., Boston, Mass., who are the sole American agents. As is clearly shown by the sectional drawing, Fig. 2, the cloth passes through the guide, i, which is connected with the stop motion, then over the carrier roll, g, through the adjustable glass-lined guide, e, then passes through the two front rolls, ab, to the space between the front and back rollers, where it can be fulled lengthways, if desired, by applying pressure with the clapper, f. After passing between the back rolls, cd, the cloth is fulled lengthways by means of the clapper, h, from which it passes to the bottom of the machine for a repetition of the operation. The driving pulley of this fulling mill is on one end of the shaft on the lower front roll.

The back roll is driven from the front roll by a belt running over a pair of cone pulleys. By shifting this belt the relative speed of the back and front rollers is changed, thus enabling more or less tension to be applied to the cloth while it is passing between the two rolls.

The clappers for fulling the goods length-

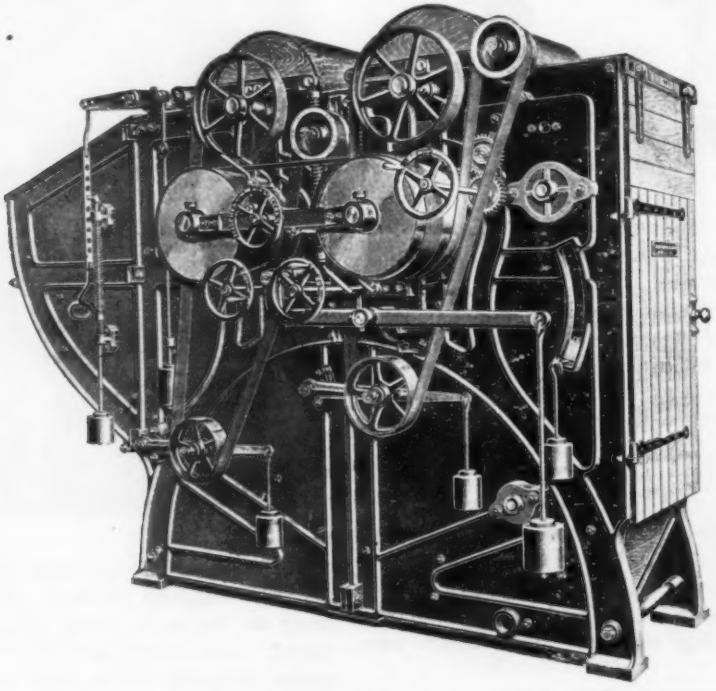


FIG. 1.

ways are easily adjusted from the outside of the machine. The upper rollers are driven by belts, as shown at Fig. 1. Thus the heavy gearing ordinarily used for connecting the top and bottom rolls is dispensed with and as a result the machine runs more smoothly and with much less noise, and, it is claimed, requires less power.

The American agents inform us that this fulling mill is in extensive use in Germany, where it has been thoroughly tested under working conditions for many years. Owing,

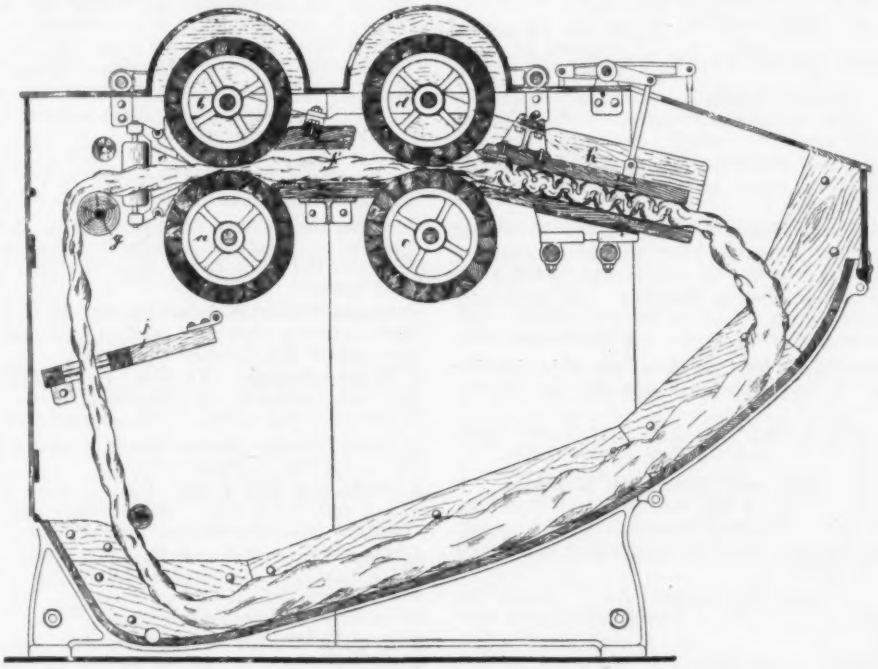


FIG. 2.

it is claimed, to the extra rolls and to the fact that the absence of gears enables the machine to be driven at a high rate of speed, the production is greatly increased. It is adapted for heavy, medium and light cloths, the sides of the fulling boxes as well as the top and bottom being adjustable.

This machine is but one of the many textile appliances which have been successfully introduced by Messrs. L. H. A. Schwartz & Co. Among others may be mentioned the decatizing machine, the single bed rotary cloth press and automatic dyeing machines.

REFERENCE INDEX FOR NEW MACHINERY, PROCESSES, ETC.

The following is a brief abstract of New Machinery and Processes which have been illustrated and described in this department during the preceding six months. It does not include the foreign items or American devices of which only brief mention has been made. Those desiring copies of the issues in which these appeared may obtain them if in print by remitting 25c. State plainly the article or articles desired.

Two Speed Drive for Hosiery Ribbers. A two speed drive which is entirely automatic and claimed to increase production 30 per cent.

A Pneumatic Beetling Machine. A pneumatic beetling machine embodying an entirely new principle.

Hank Twister for Worsted Yarn. Performs work in an easier and more speedy manner.

Return Trap System of Boiler Feeding. A trap for returning the hot water of condensation from heating, drying or cooking systems directly to the boilers.

Belting. A belting made from selected packer and foreign hides for long life and hard usage.

Machine for Attaching Labels. A pointed staple label wire stitching machine which penetrates the fabric without cutting thread while passing through.

Bleach for Artificial Silk. A hypochlorite of sodium process produced electrolytically for the

can on the scale beam. As the can fills up the scale beam is kept level by turning the hand wheel. When the sample breaks the water is automatically shut off. The can is provided with a water gauge on which is a scale indicating the weight of the water in pounds. The level of the water thus indicates the power required to break the goods.

The elasticity is indicated on an upright scale at the left of the screw. As the stream of water is the same at all times the conditions are maintained uniform in all tests. Further information can be obtained on application to the manufacturer.

THE PAUL KLUG TANDEM FULLING MILL.

The fulling mill shown in the accompanying illustrations is being introduced in the United States by L. H. A. Schwartz & Co., 53 State St., Boston, Mass., who are the sole American agents. As is clearly shown by the sectional drawing, Fig. 2, the cloth passes through the guide, i, which is connected with the stop motion, then over the carrier roll, g, through the adjustable glass-lined guide, e, then passes through the two front rolls, ab, to the space between the front and back rollers, where it can be fulled lengthways, if desired, by applying pressure with the clapper, f. After passing between the back rolls, cd, the cloth is fulled lengthways by means of the clapper, h, from which it passes to the bottom of the machine for a repetition of the operation. The driving pulley of this fulling mill is on one end of the shaft on the lower front roll.

The back roll is driven from the front roll by a belt running over a pair of cone pulleys. By shifting this belt the relative speed of the back and front rollers is changed, thus enabling more or less tension to be applied to the cloth while it is passing between the two pairs of rolls.

The clappers for fulling the goods length-

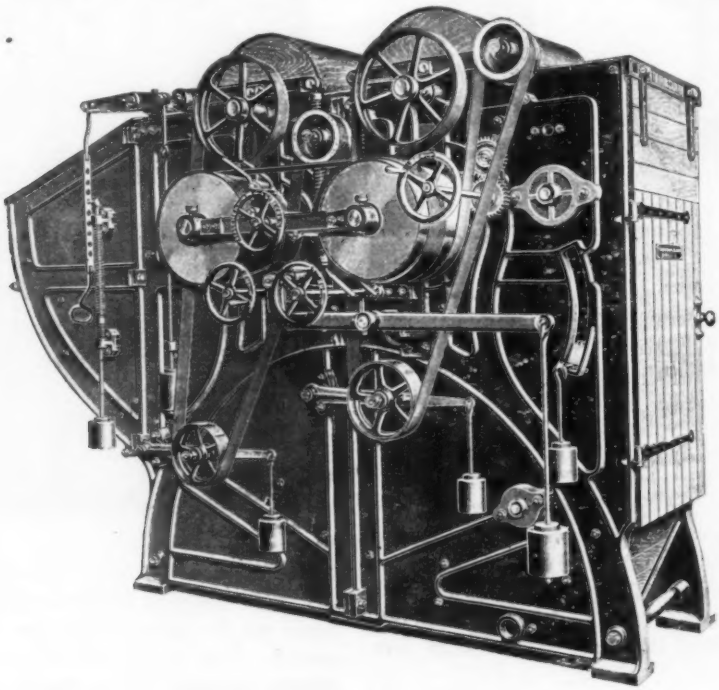


FIG. 1.

ways are easily adjusted from the outside of the machine. The upper rollers are driven by belts, as shown at Fig. 1. Thus the heavy gearing ordinarily used for connecting the top and bottom rolls is dispensed with and as a result the machine runs more smoothly and with much less noise, and, it is claimed, requires less power.

The American agents inform us that this fulling mill is in extensive use in Germany, where it has been thoroughly tested under working conditions for many years. Owing,

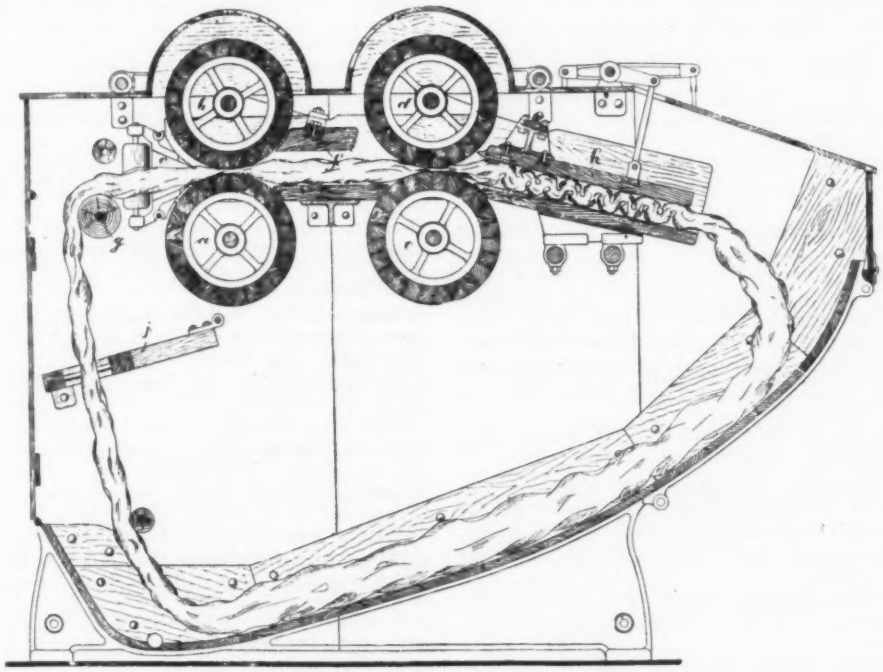


FIG. 2.

it is claimed, to the extra rolls and to the fact that the absence of gears enables the machine to be driven at a high rate of speed, the production is greatly increased. It is adapted for heavy, medium and light cloths, the sides of the fulling boxes as well as the top and bottom being adjustable.

This machine is but one of the many textile appliances which have been successfully introduced by Messrs. L. H. A. Schwartz & Co. Among others may be mentioned the decatizing machine, the single bed rotary cloth press and automatic dyeing machines.

REFERENCE INDEX FOR NEW MACHINERY, PROCESSES, ETC.

The following is a brief abstract of New Machinery and Processes which have been illustrated and described in this department during the preceding six months. It does not include the foreign items or American devices of which only brief mention has been made. Those desiring copies of the issues in which these appeared may obtain them if in print by remitting 25c. State plainly the article or articles desired.

Two Speed Drive for Hosiery Ribbers. A two speed drive which is entirely automatic and claimed to increase production 30 per cent.

A Pneumatic Beetling Machine. A pneumatic beetling machine embodying an entirely new principle.

Hank Twister for Worsted Yarn. Performs work in an easier and more speedy manner.

Return Trap System of Boiler Feeding. A trap for returning the hot water of condensation from heating, drying or cooking systems directly to the boilers.

Belting. A belting made from selected packer and foreign hides for long life and hard usage.

Machine for Attaching Labels. A pointed staple label wire stitching machine which penetrates the fabric without cutting thread while passing through.

Bleach for Artificial Silk. A hypochlorite of sodium process produced electrolytically for the

bleaching of artificial silk and other fibers of this kind.

A Thread Lubricator. A thread lubricator for knitting and sewing machines which is very simple and efficient.

Automatic Sweater Machine. A new take-up which can be applied to all plain and automatic body sweater machines.

A Slit Drum Winder. A new machine designed for winding silk, schappe, artificial silk, cotton, wool, jute and mohair yarns.

Steel Lockers for Textile Mills. Durable and economical in respect to space and first cost.

A Skiving Machine. A new skiving machine to be used in the manufacture and repair of belts in mills.

Paint for Textile Mills. A mixing of special paint for use in mills that is claimed to effect great saving in artificial light expenses.

Head for Loom Beams. An adjustable head for loom beams which can be put on without taking the beam apart.

Shrinking and Finishing Woolens and Worsteds. A process of water treatment as distinguished from steaming.

Lustering Machine. A machine for increasing the luster of mercerized cotton and to impart a soft, silklike handle and appearance to the yarn.

A Raw Stock Dyeing Machine. An automatic circulating dyeing machine for raw stock which includes a number of important improvements.

A Shuttle Threader. Obviates the objectionable sucking of the thread through the shuttle eye by the weaver.

An Improved Tie. An improved bundle-tying device which is very simple in construction.

Cloth Sponging and Shrinking Machines. A system of machines for sponging and shrinking cloth by the cold water process.

A Brush Holder. An improved metal holder for bristle stretcher.

Bobbin Stripping Apparatus. An apparatus for stripping the waste from pirns, bobbins and roving tubes.

A Corduroy Cutting Machine. Adapted to narrow or wide cords and light and heavy qualities.

A Bobbin Winder. A new metal bobbin winder for transferring yarn from spools on to either bobbins or cops.

An Automatic Loom. A loom designed to perform mechanically almost identically the same operations that the weaver does by hand.

A Crabbing Machine. Embodies many features that have proved to be desirable in this class of machines.

A Loom for Weaving Woolen and Worsted Goods. Simple in construction and designed to increase production. Embodies new features.

A Warp Measuring Machine. A machine which does away with defective marking of the warps and divides the warp into cuts of any desired length.

Cloth Shrinking and Finishing. A process which consists of the direct application of water to the fabric for the purpose of shrinking and finishing.

A Dyeing Process. A new system of dyeing which provides a complete dye house in one machine.

A New Oil Pump. An oil pump which has several new features that commend it to users.

Expelling Electricity from Fabrics. A mechanical system of getting rid of electricity in materials and fabrics during the process of manufacture.

Lighting for Textile Mills. A system of lighting claimed to effect a saving of over 60 per cent. in the current consumption.

High Speed Air Compressor. The leading feature of this compressor, aside from its high efficiency, is the simplicity of construction.

A Pick Arm Strap. A new pick arm strap for the shackle, stirrup or pick arm of looms.

Recovery of Mercerizing Caustic. A machine for the concentration of wash waters and the recovery of caustic soda.

An Arc Lamp. An intensified enclosed arc lamp which marks a distinct advance in the field of interior illumination.

Beaming Direct from Spools to Beam. A beamer designed to meet the demand for a warper that will take the yarn direct from the spool to the loom beam.

A Single Beater Finisher Picker. A new single beater finisher picker claimed to give remarkable evenness to the finished lap.

A Thread Counter. An instrument which offers great advantage in the counting of threads in fabrics over the ordinary thread counters.

A Spool Truck. A new model spool truck designed for use in large mills.

A Horizontal Cell Drier. Improvement in horizontal cell drier which is in many respects a departure from the vertical type previously built.

A Slow Speed Exhaust Fan. An exhaust fan which has been designed and built to meet the requirements of small consumption of power and reduce wear and tear.

Belting for Textile Mills. Showing what types of belting are best adapted for various types of textile mill work machinery.

A New Skein Winder. A new skein winder for wool, worsted and cotton yarn.

Dyeing and Washing Machine. An oscillating type of dyeing and washing machine which is specially adapted for knit goods.

A Carbonizing Equipment for Piece Goods. A carbonizing equipment which saturates and carbonizes the cloth with uniformity.

A Metal Protected Spool. A metal protection applied to a spool which protects the yarn as well as the spool.

An Improved Welding Process. A compound for brazing broken castings which will make them stronger than before they were broken.

An Electric Cloth Cutter. A machine embodying an automatic system of lubrication and which can be run at a very high rate of speed.

Dyeing, Bleaching, Printing, Etc.

BLEACHING, TINTING AND FINISHING LACE CURTAINS.

LOUIS J. MATOS, PH. D.

The lace curtain industry is one which has developed wonderfully during the past ten years, not only in this country, but in nearly all parts of Europe. Its extension has been along several lines, but mainly along the few that have enabled manufacturers to produce fabrics which, while possessing features of distinct merit from an artistic standpoint, yet enable the great mass of the people to acquire them at moderate prices, while the really high grade and "distinctive creations" of the lace maker's art do not suffer in the least from the enormous sales of the cheaper articles.

According to the dictates of fashion, lace for interior decoration are of two general classes, white or bleached, and cream or unbleached. By the term "cream," however, may be understood the many shades of "ecru," "Egyptian," etc., that even now are much in vogue.

The most important operations to which lace curtains are subjected after leaving the loom are bleaching and finishing. The former, in order to be properly accomplished requires that the plant undertaking this class of work should be properly equipped, not only with soaking vats and washing machines, but with kiers of sufficient size, provided with circulating pumps, and also other machinery incident to this part of the work.

A plant undertaking the bleaching and finishing of curtains should have an ample supply of clean water, the interior arrangements should be so laid out that the material to be bleached should be subjected to the least amount of handling, for the reason that such delicate tissues as curtain material is very easily damaged by undue manipulation while in the wet state, or in fact in any stage of its manufacture.

The process of bleaching lace is a particular one, and while, no doubt, in some of its details, may be materially improved, improvements should be adopted with caution, notwithstanding the introduction of bleaching agents destined to take the place of bleaching powder. By far the greatest amount of bleached curtains upon the market have been made white by this very bleaching agent.

The constant danger due to the use of common bleaching powder process is the tendency to "overbleach" with the consequent tendering of the cotton, and it is only by eternal vigilance while using the bleach liquors or during the subsequent souring that this common difficulty may be overcome or guarded against.

Material to be bleached is always marked in the weave room by means of small strips of muslin bearing numbers stenciled on with tar, so that the batches may be identified at any stage of the process. As a rule the marking includes the loom number, index letter of the pattern, the length and width.

The fabrics are then "bunched," that is, made loosely into a rope form, but without twists, and tied also loosely at intervals of 1 1/2 to 2 yards with cords; this "tieing-up" is for the purpose of preventing the goods being mutilated or pulled out of shape.

Steeping is the first operation, and is generally done in a weak solution of sal soda, although some bleachers claim to obtain excellent results by using the spent caustic liquor from the second boiling. The object of this preliminary steeping in soda is for the purpose of removing from the goods all the natural and other impurities, together with the size which the yarn contains. The practice of different bleachers varies, but as a rule the goods are steeped over night in the warm liquors which, of course, cool down considerably by morning.

The next operation is to rinse the goods thoroughly for the purpose of removing as completely as possible all the dirt and oils loosened up during the steeping. After rinsing, the material is transferred to the boiler, filling with water to which has been

added 10 per cent. of caustic soda, calculated upon the weight of the goods to be bleached. This boiler may be a pressure kier of the common circulating type, the pressure being maintained for from 6 to 8 hours under two atmospheres, after which the caustic liquors are run off, and without removing, the goods are washed with an ample supply of warm water. The "ropes" are then removed from the kier, and transferred to a revolving washer, where they are still further washed with a steady flow of hot water, washing at this point to be continued until the amount of caustic remaining in the goods is reduced to a minimum.

The ropes are then allowed to drain without squeezing or twisting, and in the meantime a weak sulphuric sour is made of about 1 1/2° Tw. Soaking continues sometimes over night, but this prolonged immersion is seldom necessary and never advisable provided the bleachery is equipped with appliances and sufficient labor to forward the goods promptly. Generally four to five hours is a sufficient time for souring if the previous washing has been sufficient.

After souring, the curtains are given another washing on the machine and again boiled in the pressure kier with 5 per cent. of caustic soda for about five hours and under two atmospheres' pressure. Some bleachers add to this second boiling a small quantity of pearl ash, but the writer does not see wherein this addition is of value. After this second boil, the caustic liquor is run off and employed for the preliminary steeping as above described.

The goods are now rinsed thoroughly to get rid of the major portion of caustic, and finally thoroughly washed in the machine. These several operations are for the purpose of freeing the cotton of everything capable of being removed by boiling caustic soda, and includes such substances that are natural to the cotton fiber, including some weak coloring matters of unknown composition, waxy matters and oil, together with accidental impurities. The removal of all of these is preparatory to the actual bleaching operation which is, as a rule, carried out in the following manner:

Bleaching tanks constructed of wood are mostly employed. The strength of the bleaching liquor is such as to contain about 1 per cent. of chlorine. The material to be bleached is laid upon a false bottom in the tank, and the bleach liquor run in and kept circulating for some time in order that there may be an even distribution of it throughout every part of the material to be bleached, otherwise uniform results in the same batch will not be obtained. For this strength of bleach (1 per cent. chlorine), 8 hours' immersion is generally sufficient. After bleaching, the material is thoroughly washed and allowed to drain, and then soaked in a weak sulphuric sour of 1 per cent. strength, this solution being kept slowly circulating for about one hour, and then allowed to remain at rest for about five hours, which insures the complete destruction of the bleach liquor. Finally wash thoroughly, taking care to test the wash waters from time to time with blue litmus paper to make sure that no traces of sulphuric acid remain. Incomplete washing at this point means rotted material.

In the manufacture of lace curtains the most frequent causes of trouble are due to imperfect finishing, and as it is often the case such goods are returned for refinishing, it is necessary that the bleacher should preserve the strength of the goods as much as possible during the bleaching.

For the purpose of making the bleached articles permanently white, ultramarine is always used (although preference should be given to several of the artificial colors for this purpose) and the first step in the finishing process is to run the pieces through a weak soda bath heated to about 110° F., and then immediately squeezed.

The composition of sizing mixtures varies, but as a rule wheat starch is found to be the base chiefly used, and according to the grade of curtains, the amount of filling or weighting is increased or decreased. The cheaper the grade of curtain the greater will be the amount. In extra fine curtains where a pe-

culiarly delicate touch or "feel" is desired, gelatine is added to the average starch mixture. The use of magnesium chloride is very common in sizing mixtures owing to its water absorbing properties, and which prevent the dusting-off of the weighting materials. Excessive quantities of magnesium chloride should be regarded with suspicion and treated as an adulterant. Cream colored curtains are either not bleached, or else bleached and tinted. Tinting has been done by means of ochres applied to the fabrics by passing them through a bath containing such insoluble coloring matters in suspension, or by adding them to the finishing size.

The final operation to which the fabrics are subjected are strictly mechanical, and consist of drying upon specially constructed frames—tenters. Stretching these goods is not as easy a matter as the written description of it would lead one to suppose. Considerable skill is necessary, the idea being to preserve by this stretching the symmetry of the design and the general uniformity of the meshes. After drying, which usually requires a few hours, the material is carefully inspected and repaired, if necessary, and then passed through heavy calendering rollers for the purpose of imparting the peculiar effect desired by the prevailing fashions.

A DYE JIGGER.

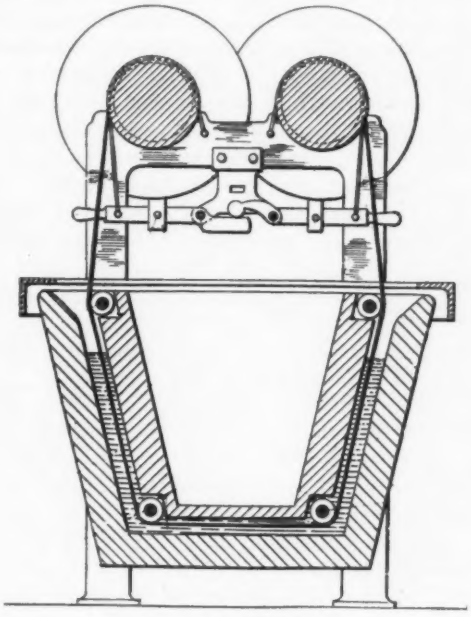
A jigger designed to impregnate the goods thoroughly with the dye liquor and to economize in the use of dyestuff has recently been patented. The inventor gives this description of the machine:

The improvement consists in the use in combination with the dye vat of a displacer and immerser which displaces the liquor over a greater area and consequently subjects the piece to a comparatively longer immersion.

Fig. 1 shows a vertical section of the new dye vat. The vat is rectangular and formed of any suitable material, such as metal or porcelain, and is provided with an immerser, as shown.

The immerser is rectangular and it is provided with recesses at its corners for receiving the guide-rollers, so that the passage for the dye and the material may be narrow and of uniform width.

The piece passes from one roller under or around the immerser to the other roller in the usual manner. As the roller or immerser almost fills the vat, a comparatively small quantity of dye liquor is required. The liquor being spread over a much larger comparative area, the piece is subjected to a longer immersion than by the ordinary method. The immerser may be corrugated or fluted to allow the liquor more readily to saturate the piece.



A DYE JIGGER.

A convenient method of applying or removing friction to or from the jig rollers consists of using bands passing over brake wheels on the shafts or axes of the jig rollers. The frictional contact is easily regulated on both rollers simultaneously from either side of the machine by means of the hand levers as shown.

The cotton-mill industry in Canada began at Dundas, Ontario, in 1856. Up to 1878 only the coarsest goods were made. At present over $1,500,000 is spent each year on supplies, excluding coal, which costs approximately $750,000.

CARBONIZING WOOL.

BY ALFRED CLARKE.
Before the Huddersfield (Eng.) Technical College.

(Continued from July.)

M. Durand, a Frenchman, patented in 1877 the use of carbonate of lime in the form of chalk or whiting, or carbonate of baryta for neutralizing the acid, they having no detrimental effect on the wool. Both are easily decomposed by the acid and converted into sulphates which may be considered insoluble in either cold or hot water. The advantages of this method are—that these substances may be applied cold, that the material is rendered cleaner and whiter, and that these carbonates are cheaper than soda. Even if an excess of whiting be used it is not detrimental to the dyeing of wool, it being found that both wool and cloth handle much softer after the use of chalk than if soda be used, and it may be interesting to dyers to note that there is not the same tendency to the production of fugitive colors after neutralizing with whiting as there is with strong alkalies such as soda. The wool can now be passed to the dyer, or dried by any of the usual drying machines, and is then ready for the scribbling and carding.

The brown color which is sometimes developed on wool exposed to a high temperature is said to be caused by the sulphur it contains. In the well-known Gobelin tapestry works, woolen yarns intended for light shades are immersed in a bath of milk of lime for 24 hours, then treated with dilute H Cl., and finally washed with water. This process diminishes the amount of sulphur by one-half per cent., and prevents the wool from becoming brown.

Experiments made by Herr Wiesner, of Vienna, are interesting as showing the different ways in which wool must be treated, according to the character of the vegetable matter which it is desired to carbonize. After examining many kinds of wool, he found that the vegetable matter might be divided into: Burrs of various kinds; fragments of straw and grass; raw textile fibers, such as jute; fragments of leaves, etc.; dung, which was composed of pure woody or cuticular cellulose. There are three kinds of cellulose. It exists in a state of almost absolute purity in the bark and pith of the impurities in the wool and in the dung. The solid cellular tissue in all vegetable matter consists principally of ligneous cellulose, and the cuticular cellulose is found in the rind of fruit, leaves and stems.

In his experiments Wiesner employed for pure cellulose, Swedish filtering paper; for ligneous cellulose, jute and thin pine-wood shavings; and for cuticular cellulose, raw cotton. These materials were plunged into the sulphuric acid diluted to a given strength, left there for about a quarter of an hour at the temperature of the atmosphere; they were then removed from the liquor, pressed carefully between sheets of filter paper to remove the excess of acid, and submitted to a certain degree of heat.

With an amount of acid equal to 1 to 2 per cent. (1 1/4° Tw., 2 1/2 Tw.), and a temperature of 104° to 122° F., the ligneous fibers at the end of 3/4 to 1 hour became brittle and brownish in color, and at 131° F. they were carbonized.

Pure cellulose presented rather more power of resistance. With 1 to 2 per cent. of acid it became brittle at the end of about an hour at 122° to 131° F.; it began to turn brown at 140° F.; and to blacken at about 149° F.

Cotton did not become brittle till the heat was 140° to 145° F.; began to turn brown at 150° to 160° F.; and did not carbonize until the temperature reached several de rees higher.

With a more concentrated solution and greater heat, the decomposition of the three kinds was more rapid, but the difference remained the same between them. Before any signs of decomposition appeared, the fibers all became so brittle that the slightest pressure reduced them to powder. It is therefore unnecessary, evidently, to burn or carbonize matter completely to purify wool from it. Thus it is seen that such vegetable substances as these can be removed from wool in an hour by employing only 2 to 3 per cent. of sulphuric acid, and at a temperature of 122° to 140° F.

He also tested horse hair, and hair of the Angora goat, and found that when the acid did not exceed 4 per cent., or the heat 140° to 149° F., fibers which previously had broken with a weight of 480 grs. now broke with only 568 grs. When the acid was raised to over 7 per cent. (Sp. Gr. 1.0464 equals about 9° to 10° Tw.) the fiber was weakened. Though wool will not bear an equally strong acid, yet if treated in proportion its strength is not injured.

Reverting now to gas processes, the main feature of these is the introduction of the fumes of vapor of hydrochloric (muriatic) acid. A patent was taken out in France in 1877 by Jourdin & Balan for the use of this and other gases for carbonizing wool. This process is now largely used in the rag trade, because the colors of the dyed rags do not bleed or run so much as when a wet process is employed.

The gas is usually generated in a retort placed beside the extracting chamber (which may be either a room or revolving box or cylinder). The gas is produced from a mixture of common salt and sulphuric acid, or by heating liquid hydrochloric acid. The rags must not be quite dry when put into the kiln or cylinder. Some extractors steam them first to moisten them slightly. The rags are spread on trays in the chamber. In case a revolving box is used the inside is fitted with long teeth so that the gas mixes thoroughly with the rags as the box slowly revolves from two to four hours.

Michel's patent, taken out in 1877, specifies the use of trays or cars sliding on a tramway into a closed chamber. The gas has a great affinity for the moisture in the material, which becomes saturated with it. After a certain time hot air is turned in, which absorbs the moisture. The chamber is heated by means of steam pipes or a flue to about 212° F., or even more, which concentrates the acid. In a short time the heat is stopped, fresh air is admitted, and when cool the material is washed, dried and willeyed. As a neutralizing agent the vapor of ammonia is passed in later on by some manufacturers, but I think this is a needless expense, as the acid is easily removed by washing.

Nitric acid in the gaseous state, produced by the action of sulphuric acid upon a nitrate and introduced into the carbonizing chamber in the same way, has also been used, but so far as I am aware has not been found so successful or economical as hydrochloric acid.

The ammoniacal solution of oxide of copper has the unusual property of dissolving cotton, paper, and other forms of cellulose, also silk. Cellulose is precipitated from the solution by the addition of an acid. This is, I believe, the basis of the method of producing artificial silk, now successfully produced in Belgium.

Another interesting method has been patented by Joly, of Elbeuf, France, which has many advantages, particularly when applied to piece goods. His method consists in the use of aluminium chloride in solution at a strength of 8° to 10° Tw., with which the cloth is saturated. After properly steeping in this solution, the excess of liquid in a hydro and the material dried at an ordinary temperature, after which it is passed through a strongly-heated carbonizing chamber. It is found best to employ a rather higher temperature when using this process than is necessary with the sulphuric acid process, in order to liberate the H Cl. from the chloride. After about three-quarters of an hour the cloth may be "dry milled" to crush the carbonized matter, and finally washed with water, or what is perhaps better, water and fuller's earth. The increased temperature required has no ill effect upon the material. The advantages of this process are that most colors are unaffcted by it, the workpeople can handle the goods freely, and there are no noxious fumes or vapors given off to poison the air or corrode the buildings. Neither is there any necessity to use lead-lined cisterns as is the case in the acid process. The liquid can be collected from the hydro extractor and used over again. The usual steam-heated cylinder drying machines are largely used for drying the fabrics. Aluminium

chloride can be purchased pure and free from any trace of iron (which would sadden the colors) for carbonizing, or it can be made by the user by dissolving aluminic hydrate in hydrochloric acid, or by decomposing barium chloride with aluminic sulphate.

M. Paul Poulin, of Paris, patented in 1881 the employment of calcium chloride, and specified a solution of this salt made up of four parts by measure—Calcium chloride solution at 20° Beaume (= 32° Tw.) (Sp. Gr. 1.160) and three parts water; or as an alternative process, a solution containing 2 pounds common salt and 2 pounds of hydrochloric acid to each gallon of water. Either of these solutions is kept boiling for 30 or 40 minutes, then cooled and poured on to the material under pressure.

DYE RECIPES.

The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD RECORD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16-page pamphlet, in convenient form for preservation. Subscription price for the Dyers' Supplement $1.00 per year.

Recipe No. 1.

Orange on Cotton Yarn.

Triazol Fast Orange R on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Triazol Fast Orange R.
(Geisenheimer & Co., 189 Front St., N. Y.)
20 lbs. Common Salt.
1 lb. Soda Ash.

Enter the yarn at 180° F., and dye at a boil for one hour.

Triazol Fast Orange R possesses good fastness to light and may be used for a padding color in print works, as it discharges perfectly.

Recipe No. 2.

Black on Worsted Yarn.

Sulphon Acid Black 2 B on 100 lbs. worsted yarn. Prepare the dye bath with

5 lbs. Sulphon Acid Black 2 B.
(Farbenfabriken of Elberfeld Co., 66 Lafayette St., N. Y.)
15 lbs. Glauber's Salt.
5 lbs. Acetic Acid.

Enter at 160° F., dye at a boil for 3/4 of an hour, then add

2 lbs. Sulphuric Acid,

and continue the boiling until the bath is exhausted.

Sulphon Acid Black 2 B possesses very good fastness to washing and alkali, and its fastness in other respects is in general good.

Recipe No. 3.

Olive Yellow on Cotton Yarn.

Immedial Yellow Olive 5 G on 100 lbs. cotton yarn. Prepare the dye bath with

8 lbs. Immedial Yellow Olive 5 G.
(Cassella Color Co., 182 Front St., N. Y.)
8 lbs. Sodium Sulphide.
5 lbs. Soda Ash.
40 lbs. Common Salt.

Dye at a temperature approaching the boil for one hour, then squeeze, rinse and dry.

Immedial Yellow Olive 5 G possesses excellent fastness to light and very good fastness to washing and acids.

Recipe No. 4.

Blue on Worsted Yarn.

Indanthrene Blue W B Powder on 100 lbs. worsted yarn. Make up the dye bath with the necessary quantity of water. Add

½ lb. Ammonium Oxalate.
6 lbs. Indanthrene Blue W B Powder
(Badische Co., 128 Duane St., N. Y.)

which has been thoroughly mixed with boiling water. The bath is then raised to 140° F., the material entered and the bath raised to the boil, and after 1/2 hour add

5 lbs. Acetic Acid

and continue the boiling 1/2 hour. Then add

Sulphuric Acid

in 3 or 4 portions of 1 lb. each, at intervals of 1/2 hour. The full period of boiling should be 2 1/2 hours. The dyed material is then aftertreated in a bath heated to about 105° F., to which has been added

3 lbs. Decroline.
1 lb. Sulphuric Acid.

The dyed wool is then entered, the bath brought to a boil and the material worked for 10 minutes. The steam is then shut off and the material worked in the gradually cooling liquor for 15 minutes longer.

When aftertreated in this way Indanthrene Blue W B Powder will be found to have excellent fastness to light and milling.

Recipe No. 5.

Blue on Worsted Yarn.

Fast Milling Blue N on 100 lbs. worsted yarn. Prepare the dye bath with

3 lbs. Milling Blue N.
(Read Holliday & Sons, 11 Gold St., New York.)
10 lbs. Glauber's Salt.
4 lbs. Acetic Acid.

The color is dissolved in lukewarm water, and the bath then filled up with cold water. The yarn is entered and brought up to a boil in 1/2 to 3/4 of an hour. Boil gently for 1/2 hour, then add 1/2 pound sulphuric acid and boil for 1/4 of an hour.

Recipe No. 6.

Red on Worsted Yarn.

Anthracene Red O O on 100 lbs. worsted yarn. Prepare the dye bath with

2 lbs. Anthracene Red O O.
(C. Bischoff & Co., 451 Washington St., N. Y.)
5 lbs. Acetic Acid.

Enter yarn at 140° F., raise slowly to a boil and dye at a boil for one hour. Then aftertreat in a bath made up with

2 lbs. Potassium Bichromate

for 1/2 hour.

Anthracene Red O O is exceedingly fast to light and fulling, and may be used to advantage in the dyeing of bunting for flags.

Recipe No. 7.

Brown on Worsted Yarn.

Lana Chromate Brown G P on 100 lbs. worsted yarn. Prepare the dye bath with

4 lbs. Lana Chromate Brown G P.
(F. E. Atteaux & Co., 176 Purchase St., Boston, Mass.)
6 lbs. Acetic Acid.
10 lbs. Glauber's Salt.

Enter at 120° F., bring slowly to a boil and dye at a boil for one hour. Then exhaust with the addition of

1 lb. Sulphuric Acid.

Continue the boiling for 1/2 hour longer, then add

3 lbs. Potassium Bichromate,

and continue the boiling for 1/2 hour longer.

Lana Chromate Brown G P gives shades of brown which possesses excellent fastness to light, fulling, cross dyeing and can be easily topped with an after-chromed fast black, thus giving almost any shade of dark brown.

Recipe No. 8.

Orange on Cotton Yarn.

Phenedine Fast Orange G on 100 lbs. cotton yarn. Prepare the dye bath with

2 lbs. Phenedine Fast Orange G.
(W. F. Sykes & Co., 85 Water St., N. Y.)
20 lbs. Glauber's Salt.

Enter at 160° F., raise to a boil in 1/2 hour, boil for 1/2 hour longer.

Phenedine Fast Orange G is exceptionally fast to light, and stands washing very well. It can also be used for the dyeing of silk by addition of sul- exceptionally fast to washing and soaping.

Recipe No. 9.

Blue on Cotton Yarn.

Sulphur Blue R Extra on 100 lbs. cotton yarn. Prepare the dye bath with

10 lbs. Sulphur Blue R Extra.
(6 lbs. Standing Bath.)
(Berlin Aniline Works, 213 Water St., N. Y.)
20 lbs. Sodium Sulphide.
5 lbs. Soda Ash.
80 lbs. Glauber's Salt.

Enter at 120° F., and dye for one hour at a temperature between 120° to 140° F. After the dyeing is completed squeeze the yarn and allow to hang for 1/2 hour, then rinse, soap if desired, and dry.

Sulphur Blue R Extra produces a bright shade of sulphur blue which possesses good fastness to most of the common color-destroying agencies.

Recipe No. 10.

Orange on Cotton Yarn.

Phenedine Fast Orange R on 100 lbs. cotton yarn. Prepare the dye bath with

2 lbs. Phenedine Fast Orange R.
(W. F. Sykes & Co., 85 Water St., N. Y.)
20 lbs. Glauber's Salt.

Enter at 160° F., raise to a boil in 1/2 hour, and boil for 1/2 hour longer.

Phenedine Fast Orange R is exceptionally fast to light, and stands washing very well. It can also be used for the dyeing of silk by addition of sulphuric acid, and the shades produced thereby are exceptionally fast to washing and soaping.

Recipe No. 11.

Blue on Cotton and Worsted Union Cloth.

Fast Union Blue G Extra on 100 lbs. cotton and worsted union cloth. Prepare the dye bath with

4 lbs. Fast Union Blue G Extra.
(Kalle & Co., 530 Canal St., N. Y.)
25 lbs. Common Salt.

Enter the cloth at 100° F., work to a boil in 30 minutes, boil 15 minutes, shut off the steam and run for 30 minutes in the gradually cooling bath.

Fast Union Blue G Extra possesses excellent fastness to light and weather, very good fastness to washing, and good fastness to acids and alkalies.

Recipe No. 12.

Red on Worsted Yarn.

Anthracene Red O on 100 lbs. worsted yarn. Prepare the dye bath with

2 lbs. Anthracene Red O.
(C. Bischoff & Co., 451 Washington St., N. Y.)

5 lbs. Acetic Acid.

Enter yarn at 140° F., raise slowly to a boil and dye at a boil for one hour. Then aftertreat in a bath made up with

2 lbs. Potassium Bichromate

for 1/2 hour.

Anthracene Red O is exceedingly fast to light and fulling, and may be used to advantage in the dyeing of bunting for flags.

Recipe No. 13.

Red on Cotton Yarn.

Direct Fast Scarlet 8 B on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Direct Fast Scarlet 8 B.
(A. Klipstein & Co., 122 Pearl St., N. Y.)
40 lbs. Glauber's Salt (Crystals).
2 lbs. Soda Ash.

Enter at 180° F., and dye at a boil for one hour.

Direct Fast Scarlet 8 B is a level dyeing color which possesses the usual properties characteristic of the direct cotton colors.

Recipe No. 14.

Blue on Worsted Piece Goods.

Tartrachrome Navy Blue B on 100 lbs. worsted piece goods. Prepare the dye bath with

4 lbs. Tartrachrome Navy Blue B.
(American Dyewood Co., 84 William St., N. Y.)
10 lbs. Tartrachrome Assistant.
30 lbs. Glauber's Salt.
3 lbs. Formic Acid.
1½ lbs. Chrome.

Enter lukewarm, raise slowly to a boil and boil for two hours. The color and chemicals may be all added as usual at the start; or they may be added separately at intervals of a few minutes apart, starting with the chrome, then adding the acid and assistant, and lastly the color. This latter process exhausts all the chrome at once from the bath and so secures within the fiber the greatest amount of color lake formation.

Tartrachrome Navy Blue B is a one dip mordant blue of excellent leveling properties and of exceptional fastness to light. It will be found useful alone or in combination for the production on woolen and worsted piece goods of a variety of fashionable shades of extra light fastness.

Recipe No. 15.

Orange on Worsted Yarn.

Milling Orange R R on 100 lbs. worsted yarn. Prepare the dye bath with

3 lbs. Milling Orange R R.
(Read Holliday & Sons, 11 Gold St., New York.)
10 lbs. Glauber's Salt.
4 lbs. Acetic Acid.

The color is dissolved in lukewarm water and the bath then filled up with cold water. The yarn is entered and brought to a boil in 1/2 to 3/4 of an hour. Boil gently for 1/2 hour, then add 1/2 pound sulphuric acid and boil for 1/4 of an hour longer.

Recipe No. 16.

Green on Worsted Yarn.

Anthracyl Chrome Green A on 100 lbs. worsted yarn. Prepare the dye bath with

4 lbs. Anthracyl Chrome Green A.
(F. E. Atteaux & Co., 176 Purchase St., Boston, Mass.)
6 lbs. Acetic Acid.
10 lbs. Glauber's Salt.

Enter at 120° F., bring slowly to a boil and dye at a boil for one hour, then exhaust with the addition of

1 lb. Sulphuric Acid.

Continue the boiling 1/2 hour longer, then add

3 lbs. Potassium Bichromate,

and continue the boiling for 1/2 hour longer.

Anthracyl Chrome Green A gives dark shades of green which possess excellent fastness to light, fulling, cross dyeing, and especially suited for the dyeing of dark olives.

Mill News.

Those interested in receiving early and more complete investigated information of projected new mills, enlargements improvements, fires facts and gossip of the trade are referred to the Textile Advance News, issued weekly by the publishers of the Textile World Record, at $15.00 per year.

COTTON.

New Mills.

Alabama, Jacksonville. The Verlina Mills have been organized for the purpose of building a plant to weave the yarn produced by the Ide Cotton Mills, and have awarded contract to Guy Amos of Anniston, Ala., for the erection of a factory building, 1 story high, 100 by 136 ft. The equipment will be 200 looms. Geo. P. Ide, A. H. Robbins and H. R. Rice are interested.

Georgia, Senoia. The Senoia Duck Mills have secured a charter with capital stock of $100.000, and have purchased a site for manufacturing. The incorporators are L. Ware, Vindex and Lee Hand, L. E. Arnall, R. L. Arnall, W. F. Baggarley, J. H. Jones, M. H. Couch and N. G. Long.

Massachusetts, New Bedford. A yarn mercerizing department will be built in connection with the Holmes Mfg. Co. The plant is now under construction. This department will be 1 story high, 76 by 202 ft.

*New York, Utica. A steam and electric power plant is being constructed by the Utica Fine Yarn Co. in connection with their buildings.

*North Carolina, Lexington. Buildings for the Dacotah Cotton Mills, Inc., are practically finished. It is expected machinery will be in operation early in the spring.

*North Carolina, Marion. In January, the Marion Mfg. Co. will begin manufacturing. Equipment which consists of 12,500 ring spindles and 300 looms for the production of wide print cloth, is being delivered and set up. Boilers and a steam engine have been installed. D. D. Little of Spartanburg, S. C., is president and treasurer; Wm. E. Wall, New York, vice-president; and S. L. Copeland of Marion, secretary.

*North Carolina, North Wilkesboro. A charter has been granted the Finwin Cotton Mill with capital stock of $200,000. T. B. Finley of North Wilkesboro and J. Locke Erwin of Concord, N. C., are the incorporators. Early in 1908 Mr. Finley was interested in organizing a company and has been working on the project since that time.

*North Carolina, River Falls. The capital stock of the River Falls Cotton Mills Co. has been increased to $250,000, and plans have been completed to build a 10,000-spindle mill. This project has been reported previously at Graham, which is the post office. J. W. Menefee, Graham, is president and treasurer, and R. N. Crook, secretary.

*North Carolina, Warrenton. Good progress is being made on buildings under construction for the Peck Mfg. Co., and Mr. Peck expects manufacturing will begin about April 1. As noted 5,000 spindles are to be installed.

*Oklahoma, Lawton. A charter has been granted the E. L. Shuford Mfg. Co. to build a cotton mill. The capital stock is $500,000. Browne Corneilson, Oklahoma City, E. L. Shoford, and R. E. Trosper are the incorporators. As noted a plant of 10,000 spindles and 340 looms will be built.

*South Carolina, Great Falls. Plans and specifications for the Republic Cotton Mills are practically completed. Complete particulars of company and proposed plant and equipment were given in October.

*South Carolina, Greer. Buildings for the new Greers Mfg. Co. are completed, and F. G. Cobb, superintendent, has a force of hands at work installing machinery. It is announced the mill will begin turning out goods on or before February 1.

*South Carolina, Lowndesville. Announcement has been made that $250,000 has been subscribed to the proposed cotton mill and work on the plant will be started at once. H. W. Kirby and J. P. Gossett, the latter president and treasurer of the Calhoun Mills, Calhoun Falls, S. C., are interested.

*Texas, McKinney. The new cotton manufacturing company will organize under the name of the Lone Star Cotton Mill, and will build a 5,000-spindle plant. A brick mill will be erected and equipped with sprinkler system for fire protection, producer gas plant and electrical equipment. The capital stock is $200,000. J. Berry Burrus is president; S. D. Heard, first vice-president; J. T. Crouch, second vice-president; J. L. White, treasurer and W. B. Newsome, secretary.

Enlargements and Improvements.

*Alabama, Huntsville. Enlargement to the weaving department of the Lowe Mfg. Co. will be made and 200 new looms installed, making a total of 450 looms. No new spinning machinery will be required. The capital stock is $300,000. J. Harper Poor is president; Charles Lane Poor, treasurer; D. C. Finney, agent and buyer.

Canada, Ontario, Hamilton. The Imperial Cotton Co., Ltd., have placed an order with the American Moistening Co., Boston, Mass., for full equipment of humidifiers to be installed in their carding, spinning and weaving departments.

*Connecticut, Jewett City. Good progress is being made on the new hydro-electric plant of the Ashland Cotton Co. at Hopeville, Conn. The power will be transmitted to their mill at Jewett City. L. B. Dow, a construction engineer of Boston, has charge of the work. S. Morgan Smith Co. are furnishing the hydraulic apparatus and the General Electric Co. are furnishing the electric machinery.

Connecticut, Taftville. Details cannot be given of the second new weave shed to be built by the

Ponemah Mills or of the addition to No. 2 Mill, which will be equipped with spinning machinery. A large bleachery also may be constructed. These matters will be decided early in 1910.

Connecticut, Willimantic. On land near the new No. 6 mill, the Willimantic Mills (American Thread Co.) will build a 3-story bleach house. Construction work will be started in the spring.

Georgia, Athens. Enlargements and improvements are to be made at once by the Star Thread Mills which will double the present equipment of 7,000 ring spindles. The plant is now driven by water power, and in connection with the enlargement, James White, proprietor of the company, W. Y. Bryan and J. Y. Carithers are planning the construction of a hydro-electric plant at Barrett Shoals on the Oconee River. The plans include the construction of a dam for developing 4,000 h. p. to be transmitted electrically for operating the Star Thread Mills and for lighting purposes.

Georgia, Quitman. The Atlantic & Gulf Mills are installing new machinery in No. 1 Mill to make combed Sea Island yarns.

Georgia, Raccoon Mills. Stewart, Morehead & Co., of Savannah, cotton exporters, have purchased the Raccoon Co.'s plant, which contains 3,500 spindles and 112 looms for manufacturing ducks and drills, and will form a company to operate it. It is rumored they will convert the plant into a yarn mill, disposing of the looms, and purchasing new spinning machinery. Valuable water rights go with the property, which will be developed for running the mills by electricity and furnishing power and light to near-by towns.

*Maine, Lewiston. Five hundred new looms have been ordered by the Hill Mfg. Co. The new mill has been completed and rearrangement of old machinery and installation of new is in progress.

Maine, Waterville. An equipment of humidifiers in being installed for the Lockwood Co. by the American Moistening Co.

Massachusetts, Fall River. A new storehouse is being erected for the Luther Mfg. Co. adjoining the old storehouse.

*Massachusetts, Fall River. The 3-story addition to No. 1 Mill of the Bourne Mills is to enlarge the carding department, but the capacity of the mills will not be increased.

Massachusetts, Fall River. Two hundred wide looms are being added by the American Linen Co.

Massachusetts, Hebronville. The Hebron Mfg. Co. have started work on the foundations for three new 250 h. p. boilers, which will replace six old boilers. The change will be made without interfering with the production of the plant. A number of improvements have been made since W. J. Howland took charge.

Massachusetts, Lowell. An addition will be built to the boiler house of the Appleton Co., 50 by 60 ft. Nine new boilers are to be installed.

*Massachusetts, New Bedford. Good progress is being made on the new weave shed and cloth room for the Whitman Mills, on which construction work was started last August. These new buildings will cover about 5 acres of land.

*Massachusetts, Three Rivers. When fully equipped the new weave shed of the Palmer Mill of the Otis Co. will contain 1,260 looms. The old weave rooms in the main mill will be filled with cards and other preparatory machinery. An addition to the picker house and cotton opening room will probably be erected, and a new hydro-electric plant is being planned which will involve the erection of a new dam.

Massachusetts, Waltham. The Boston Mfg. Co. will build a 3,500 h. p. steam plant which will comprise a new building with brick smoke stack and a full equipment of Manning boilers, some of which will be removed from the old boiler plant.

New Hampshire, Claremont. In addition to improvements at the Monadnock Mills which have been noted, they are installing a new hydro-electric power plant of about 850 h. p. The water wheels and hydraulic equipment are being furnished by the S. Morgan Smith Co. The Westinghouse Electric & Mfg. Co. are supplying the electrical apparatus.

*New Hampshire, Dover. Work on the new picker mill of the Pacific Mills has been started. The roof of the new mill is now being put on.

New Hampshire, Salmon Falls. In the spring the Salmon Falls Mfg. Co. will replace their old ring spinning equipment with new spindles. Contract for this new equipment has been awarded. It is rumored that a new weave shed will be erected and all the present weave rooms combined in the new building. The space thus vacated in the old buildings is to be equipped with preparatory machinery.

New Hampshire, Somersworth. In the spring the Great Falls Mfg. Co. will tear down their old No. 1 Mill and erect a new 5-story building of modern mill construction. This new building will adjoin the new mill which has just been completed. In appreciation of the thirty years' faithful services of Charles H. Plummer as agent of the mills of the Great Falls Mfg. Co., a large bronze tablet will be placed on the new building, reading, "The Great Falls Mfg. Co., 1909, Charles H. Plummer, agent."

*New Jersey, Passaic. In connection with the reported improvements at the Brighton Mills a large repeat order has been awarded the American Moistening Co. for the extension of their system of humidifiers.

New York, Brooklyn. D. W. Shoyer & Co. have transferred their hammock plant from Philadelphia to a large concrete building, 30 Main St., Brooklyn, where they have excellent facilities for manufacturing.

*South Carolina, Gaffney. A weaving department of 82 looms is being equipped by the Globe Mfg. Co. for making fine and fancy cotton goods. It is planned to increase this number when the department is running in good order.

North Carolina, Rocky Mount. Two thousand spindles, with preparatory machinery, have been ordered by the Rocky Mount Mills.

North Carolina, Roxboro. Contract has been awarded by the Roxboro Cotton Mills for a steam power plant, and a 100 h. p. engine direct connected to a 75 kw. generator.

Rhode Island, Pawtucket. J. & P. Coats, Ltd., have awarded contract for a large addition to the power plant of their local branch.

Rhode Island, Warren. R. T. Walker and J. H. Estes, president of the Estes Mills, Fall River, Mass., have purchased the property of the Cutler Mfg. Co. This is independent of the Estes Mills. The Cutler Mfg. Co. will be reorganized in a few weeks and the Warren office will be opened after January 24 at 1290 Stafford Rd., where all communications should be addressed. Extensive changes are to be made in the machinery equipment.

Rhode Island, Warren. The Warren Mfg. Co. is building a 1-story brick building, 40 by 60 ft., to be used for a cloth room.

*South Carolina, Greenville. Twenty-five thousand spindles, 34 cards and other machinery is being installed in the new building of the Brandon Mills. When this installation is completed the total new equipment will be 40,000 new spindles, 50 new cards and 1,000 looms. J. I. Westervelt is pres., treas. and buyer.

South Carolina, Greer. A new cloth room will be built for the Victor Mfg. Co., and the old cloth room equipped with new looms. Some new machinery will be needed for the new cloth room.

*South Carolina, Lancaster. Ground has been staked off for the 50,000-spindle addition to the Lancaster Cotton Mills.

South Carolina, Lockhart. Ten thousand spindles are to be installed in Mill No. 2 of the Lockhart Mills, and the cloth room will be removed from No. 1 Mill to No. 2 Mill. A brick addition, 20 by 50 ft., will be built to No. 1 Mill, and in addition to this four large brick warehouses will be constructed.

South Carolina, Union. Three new warpers will shortly be installed in the plant of the Union-Buffalo Mills Co.

South Carolina, Woodruff. New cards, combers, 6 spinning frames and a new spooler are being added to the regular equipment of the Gray Cotton Mill, and they will manufacture combed peeler yarns, 40s to 60s.

*Texas, Sherman. Reports that the Sherman Mfg. Co. is installing new machinery are incorrect. A new steel water tank is being erected for fire purposes, and other improvements are being made to their fire protective system. These are all the changes that will be made at present.

Mills Starting Up.

*North Carolina, Mountain Island. C. E. Hutchison, president and treasurer of the Woodlawn Mfg. Co. of Mt. Holly, N. C., will have charge of manufacturing for the Mountain Island Cotton Mill, a new corporation which has taken over the plant of W. & J. Knox Net & Twine Co. Manufacturing has not been started as organization is not fully completed. The present equipment consists of 10,000 spindles and other machinery for making twine and cordage.

*North Carolina, Rutherfordton. The old Levi Cotton Mills have been started up by the new Cleghorn Mill Co., recently organized as noted.

*Pennsylvania, Chester. The mills of the Lincoln Manufacturing Co., recently purchased by Jos. H. Parvin of Philadelphia, are being put in condition to be started up again. R. C. Thatcher, formerly with the Coosa Mfg. Co., Piedmont, Ala., will be in charge of the plant as superintendent. The mill, which contains 12,000 ring and 2,160 twisting spindles, were run on combed and carded yarns. It is said that the mill will be in operation by January 1 next.

Mills Shutting Down.

Pennsylvania, Reading. The Reading Cotton Mills on South 9th St., operated by Garner & Co. on sheetings, shirtings, twills, etc., with 17,216 spindles and 412 looms, have been shut down and will not be started up again unless other interests obtain control.

WOOLEN.

New Mills.

*Connecticut, Rockville. The Rockville Worsted Co. will have their plant ready for manufacturing early in January. High grade worsted goods for men's wear will be woven.

*Maine, Kennebunk. During January machinery will be installed in the Kennebunk Mills ready for manufacturing. The new building is nearly ready and 100 looms have been ordered. The management will be the same as that of the Goodall Worsted Co., Sanford, Me., but ownership will be vested in Kennebunk Mills, Inc., Geo. B. Goodall, president, and Louis B. Goodall, treasurer.

Massachusetts, Lawrence. The U. S. Worsted Co. will build a 6-story brick mill on the old Chandler grain mill property on South Broadway. The mill will be devoted to spinning and weaving.

*Rhode Island, Providence. Beginning January 1, F. B. Manley and Allison Stone will operate a number of looms in the plant of the Paramount Worsted Co. on men's wear under the style of the Monset Mill.

*Rhode Island, Woonsocket. The new mill to be built by Charles L. Harding of Harding, Tilton & Co., Edward Harris Rathbun and Ervin S. Dunn will be known as the Samoset Worsted Mill. A corporation will be formed.

Enlargements and Improvements.

*Connecticut, Rockville. A pair of 18-inch S. Morgan Smith Co. turbine wheels are being installed in the plant of the New England Co., controlled by the Hockanum Mills Co., which will replace an old fashioned breast water wheel.

Indiana, Seymour. The Seymour Woolen Factory Co. is installing new looms to replace old equipment and increasing the capacity to 68 broad looms.

*Maine, Limerick. Twelve hundred new worsted spindles will be installed by the Limerick Mills. As noted, the stockholders have voted to increase the capital stock to $300,000.

*Maine, Ounegan. Machinery in the Ounegan Woolen Mill (American Woolen Co.) is being rearranged with a view to economizing in space so new equipment may be added without additional building. Thirty-two looms will be added. This means that two shifts of help will be employed in the carding and spinning rooms.

Maine, Sanford. The foundation has been laid by the Goodall Worsted Co. for a second addition which will adjoin the addition recently completed, extending the building to the street.

Massachusetts, Huntington. The Huntington Mfg. Co., of which W. M. Lovering of Taunton is principal stockholder, have purchased the plant which they have operated under a lease for the past three years. No extensive enlargements are contemplated at this time, but general improvements will be made in the way of repairs and rearrangement of machinery. They are now operating 40 looms on fancy worsteds which are sold through Wm. M. Lovering & Co., New York.

Massachusetts, North Adams. Twenty new looms and a Hunter scouring machine have been installed by Strong, Hewat & Co. Old machinery has been thrown out.

*Massachusetts, North Andover. The new mill of the Brightwood Mfg. Co. is completed and equipment is being moved from the old mill. Eighteen new English looms are to be added, giving a total of 192 looms.

*Massachusetts, South Royalston. The additions to the Whitney Mill (American Woolen Co.) will be completed about February 1. As noted, 80 looms will be installed, also picker house equipment.

*Massachusetts, Uxbridge. A large force of men are working on the new weave shed of the Hecla Mill (American Woolen Co.). The building will be 55 by 150 ft., and will be equipped with 100 looms for weaving 3/4 goods. It is expected the machinery will be in operation within two months.

Massachusetts, Uxbridge. The Waucantuck Mill has bought 26 looms formerly operated at Franklin, Mass., which will be removed to Uxbridge and set up in two or three weeks.

Massachusetts, West Millbury. Twelve looms are being added to the Millbury Mills, a branch of C. A. Root & Co. of Uxbridge.

Michigan, Yale. A new set of cards, 3 mules, and 6 new looms are being installed in the Yale Woolen Mills.

New York, Firthcliffe. An addition to the printing department of the Firth Carpet Co. will be built, 80 by 50 ft. The new weave shed, 100 by 200 ft., previously noted, is completed and machinery equipment has been ordered.

New York, Jamestown. Plans have been prepared by Ashworth & Odell Worsted Co. for a new brick mill. Last January they purchased a tract of land adjoining the Erie Railway on which the mill will be built. They manufacture 2/15s to 2/40s worsted yarns on the Bradford system, operating 1,500 spindles.

New York, Lestershire. A large water softener plant has been installed by the Faatz-Reynolds Felting Co.

New York, Newburg. The Strook Felt Co., who have recently been making extensions and additions to their plant in which they manufacture all kinds of felts, have placed an order with Hungerford & Terry for one of their improved filtration systems, consisting of a two and a half million gallon gravity filter plant and a reservoir with a capacity of a half million gallons.

North Carolina, Spray. An addition is being built by the Spray Woolen Mill Co. for storing, packing and folding.

*Ohio, Cleveland. Repairs will be made at once by the Ohio Yarn Mills Co. As noted loss of about $65,000 was caused by fire. Peter P. Hasek, secretary and treasurer of the company, has purchased the stock formerly held by T. C. Adams and F. C. Menser, and is now sole owner. Two sets of cards and 828 spindles are operated on woolen and merino knitting yarns.

*Ohio, Piqua. A. M. Orr, vice-president of the Orr Felt & Blanket Co., is arranging for worsted machinery for their worsted branch to be started in the old mill, as noted previously. The new department is expected to employ about 100 hands.

*Ohio, Ravenna. Work on the addition to the power plant of the Redfern Worsted Mills (Cleveland Worsted Mills Co.) is going on rapidly, and brick work on the addition to the yarn mill has nearly been completed.

*Pennsylvania, Bridgeport. The new mill of James Lees & Sons Co., which has been under construction for some time is completed, and will be filled in the near future with woolen and worsted spinning machinery to about two-thirds its capacity. They will install an additional 500 h. p. compound engine. The new building is 5 stories high, 200 by 80 ft., of re-enforced concrete construction. The machinery will be electrically driven.

*Pennsylvania, Philadelphia. A 2-story addition, 80 by 45 ft., is being built for the Ardross Worsted Co., and the capacity will be increased about 40 per cent. They manufacture worsted

dress goods. James Lees is president and Thomas Munro is treasurer.

*Rhode Island, Allendale. The addition under construction for the Allendale Worsted Mills is nearly completed and machinery is expected within a few days.

Rhode Island, Gloucester. Dexter Elliott has installed a 90 h. p. engine and boiler on account of the low water, and has resumed manufacturing. He manufactures shoddy on 8 sets.

Rhode Island, Greystone. Contracts have been awarded by Joseph Benn & Sons for a new weave shed, 190 by 62 ft., five stories high, a new spinning mill, 70 by 50 ft., a new concrete dye house and additions to the present dye house. About $400,000 will be expended.

*Rhode Island, Pawtucket. The new worsted mill of the Lorraine Mfg. Co. is nearing completion, the outside work being practically finished. They expect the new mill and addition to the power house will be ready for use in a few weeks.

Mills Starting Up.

*Iowa, Bonaparte. Joseph Cohen & Son and Julius Frankel & Sons of Jacksonville, Ill., will operate the woolen mill of Meek Bros. Co. which they purchased recently from G. D. Pocock and associates. The plant will be in full operation within sixty days, giving employment to two or three hundred hands.

Kansas, Topeka. The Western Woolen Mfg. Co. has been incorporated with capital stock of $35,000, and will take over the plant of the Western Woolen Co. Organization has been effected with E. H. Crosby, president; James W. Going, vice-president; Oscar Neil, secretary; J. R. Burrow, treasurer, and J. F. McAfee, general manager.

Massachusetts, Rochdale. Large orders have been received by A. W. Howarth & Son, and the Rochdale Woolen Mills will be running in full within three weeks. Very little has been done in this plant for several months.

Massachusetts, Worcester. A corporation has been organized under the style of Geo. W. Davis, Inc., which succeeds the Southgate Woolen Co. Geo. W. Davis is president, treasurer, agent and buyer, and Robt. Illingworth is superintendent. The plant contains two sets and 40 looms, which will be operated by steam power on satinets, unions, etc. Manufacturing will be started at once. Plans are being made to build a dye house.

Mills Shutting Down.

Ohio, Napoleon. The Napoleon Woolen Mills have shut down indefinitely.

Pennsylvania, Philadelphia. Schaum & Uhlinger, builders of textile machinery and hydro-extractors at Glenwood Ave. and 2d St., have recently placed a contract with a prominent builder for alterations to their present plant which will cost in the neighborhood of $3,600.

SILK.

New Mills.

*New Jersey, Paterson. The new mill being erected for Oppenheim & Levy is nearing completion. What the product will be has not been given out, but it is understood some machinery will be imported.

*New Jersey, Paterson. Cohn & Eisman, the new silk firm operating at 15 North Second St., have 10 looms which are weaving 36-inch broad silks. Morris Cohn attends to the buying.

New Jersey, Paterson. The Knickerbocker Silk Co., a new concern, will start a ribbon plant in the new Hall Mill. They will operate 20 looms.

*New York, Theresa. David Moore is in charge of the Theresa Silk Co., the new concern which is installing machinery in the Santway building at the corner of Mill and Foundry Sts.

*Pennsylvania, Chester. Contract for the erection of a group of buildings has been awarded by Samuel Courtauld & Co. of England, to Wm. Provost, Jr., of Chester, whose bid was about $185,000. Contracts for engines, boilers and other equipment have been awarded to Robt. Wetheril & Co. of Chester. The plant is to be located at Marcus Hook, below Chester.

*Pennsylvania, Lehighton. The building for H. A. Diefenderfer's new silk mill is ready for machinery, and equipment will be installed at once. This is a silk throwing plant.

*Pennsylvania, Vera Cruz. The new silk mill known as the Vera Cruz Silk Co. has begun manufacturing broad silks on 12 looms.

Enlargements and Improvements.

*Connecticut, Danbury. The new mill built for the Tweedy Silk Mills, A. E. Tweedy, proprietor, has been completed, and 35 new looms are being set up. Looms from the old weave room also will be set up in the new room.

Connecticut, Mystic. Machinery of the Rossie Velvet Co. is being rearranged to facilitate the work.

New Jersey, Burlington. Plans are being prepared by Martin L. Cohn Co. of New York, owners of the Burlington Silk Mills, Inc., for the proposed enlargement mentioned last August. The addition will consist of a 2-story brick structure, 100 by 300 ft., to be equipped for silk manufacturing. The structure will be fireproof and have a 1-story brick annex for power room, 20 by 40 ft. inside. Contracts for construction work will be awarded shortly.

New Jersey, Paterson. The Belmont Silk Co. have removed from 22 Paterson St. to the Todd Mill, Van Houten St. They have space for 20 more looms which may be installed.

New York, Whitehall. The Champlain Silk Mills have placed a repeat order with the American Moistening Co., Boston, Mass., for humidifiers.

New York, Binghamton. A permit has been secured by the Ballard Silk Co. to enlarge their mill. Construction work will be started in the spring They manufacture taffetas on 6 looms.

New York, College Point. Two stories are to be built on the buildings of the Myhnepo Ribbon Mills on Eighteenth St. It is expected enlargement will be completed early in the spring.

Pennsylvania, Lancaster. Ground has been broken for a new weave shed with capacity of 200 looms for Follmer, Clogg & Co. Upon completion of the building 50 looms will be installed and the balance of the space will be filled up gradually. They manufacture umbrella silks on 64 broad and 50 narrow looms.

Pennsylvania, Philadelphia. A tract of land at 18th and Courtland Sts., comprising 3 1/2 acres, has been purchased by the Friedberger-Aaron Mfg. Co. They will erect at once a 3-story reenforced concrete factory building, 62 by 350 ft., and a power house, 50 by 100 ft., contracts for which have been awarded. Later additions will be made at a total cost of $350,000.

MISCELLANEOUS.

*Connecticut, Hartford. The Hartford Thread Co., 228 Market St., will convert spool cotton of all kinds on spools, tubes and cones, operating by steam power. This is not a corporation. A. C. Loveland & Co. of Hartford will act as treasurer, and Wm. Forsyth is superintendent and buyer.

*Illinois, Elgin. About the middle of January, the Western Thread Co. of Chicago will move to Elgin, occupying the large new plant now under construction. The machinery equipment, which is to be largely increased, will be operated by electric power. There will be some changes in the company upon the removal, regarding which nothing can be given at this time.

Massachusetts, Boston. Repairs to the plant of the Dorchester Waste Co., recently damaged by fire, have been completed and operations have been resumed.

Massachusetts, Chicopee Falls. A new boiler has been installed by the Hampden Bleachery.

Massachusetts, Lowell. A small addition is being built for the Lowell Bleachery, 32 by 34 ft., at estimated cost of $1,500.

New Hampshire, Meredith. A new penstock and two S. Morgan Smith Co.'s water wheels are to be installed by the Meredith Linen Mills.

New Jersey, Fairview. The Bellman Brook Bleachery Co. has given a repeat order to Hungerford & Terry of Philadelphia for a water softening plant.

New York, Saratoga Springs. A new plant for the manufacture of lace will be built and equipped by Francis Binch, a lace manufacturer of England. The Citizens' National Bank and a number of wealthy residents are financing the project.

New York, Utica. The Ritesize Underwear Co. has been incorporated with capital stock of $30,000, $5,000 paid in, and will equip a plant for manufacturing men's union suits in the Williams Building. Fred C. Lewis, formerly of the Illma Underwear Co., which has removed to New Hartford, will be manager, and Harry M. Fraser of Cohoes, who is a director in the new company, will attend to the selling. Mr. Fraser was also formerly connected with the Illma Underwear Co.

*North Carolina, Flat Rock. It has been decided to rebuild the Skyland Hosiery Co.'s finishing plant, recently destroyed by fire.

Pennsylvania, Philadelphia. The Lehigh Manufacturing Company, 22d and Lehigh Ave., manufacturers of lace curtains, have placed a contract with a prominent builder in this city for the erection of what is said to be one of the largest and most costly textile buildings in this city. The plans call for a building 7 stories high with a frontage of 44 feet and depth of 78 feet, of reinforced concrete construction, with an attractive exterior of terra cotta, brick and cut stone; the estimated cost being about $500,000. The company, which owns the entire block bounded by Lehigh Ave., 21st and 22d Sts. and Somerset St., proposes within the near future to erect a third building on the site.

Pennsylvania, Philadelphia. The Copley Winding Works have been started up at 1839 E. Madison St., by George Hinchcliffe. Machinery has been installed for the coning of cotton, worsted, woolen and merino yarns, and arrangements are being made for the installation of tubing, winding and spooling machines which will be set up and put in operation as soon as delivered.

Pennsylvania, Pottsville. A new bleaching and dyeing plant was started up the first of November in this city and is being operated under the name of the Pottsville Bleaching & Dyeing Co. The officers of the company are John P. Schwenk, pres.; H. L. Miller, sec. and treas., and Thomas B. McMahon, manager. The building which they have had erected and which they are now occupying is L-shaped, 99 by 30 ft., with an annex 15 by 30 ft. In the annex they have installed their boiler and engine and the balance of the plant has been equipped with up-to-date bleaching machinery. At the present bleaching only is being done but they have in contemplation the erection of another building with a view of starting up on dyeing.

*Rhode Island, Pawtucket. Space has been leased in the James S. Brown Bldg., on Main St., by the Pawtucket Lace Finishing Co. It is expected that machinery will be installed before January 1. Joseph S. Gendron is pres., Joseph Brassard is sec. and treas., and Gustave Testut is superintendent. Mr. Testut was formerly connected with the American Textile Co. of Pawtucket.

Rhode Island, Pawtucket. The Nonpareil Mfg. Co. has been incorporated with capital stock of $100,000, and will manufacture and deal in mercerized and glazed cotton yarns and threads, and also

in woolen yarn. The plant will be located in Pawtucket. Isadore Cote, Joseph Broulette and others are interested.

Rhode Island, River Point. Machinery for mercerizing cotton cloth by a new process is being received by S. H. Greene & Sons' Corporation.

*South Carolina, Greenville. In addition to the recent increase in capacity of 50 per cent., the Union Bleaching & Finishing Co. will build an addition and double the present capacity. Construction work will be started at once and the addition will be completed in the spring. As noted the capital stock was increased from $300,000 to $400,000 and electric power equipment is being installed.

Tennessee, Memphis. The Memphis Bag Co. has awarded contract for a 6-story brick mill, 160 by 50 ft., to be equipped for the manufacture of cotton and burlap bags. They do not spin or weave.

Washington, Chehalis. Messrs. Yule and Piddick of Renton, Wash., are arranging details of the flax factory which it is proposed to locate here. They propose to manufacture twine and cordage, later taking up the manufacture of linen fabrics.

FACTS AND GOSSIP.

Connecticut, Meriden. The mill of the Meriden Woolen Co. on Pratt St. will be sold at public auction in January. The building, land and machinery are to be disposed of.

*Connecticut, Vernon. Nothing definite has been planned regarding rebuilding the Vernon Woolen Co. M. H. White, secretary and treasurer of the company, states construction work will probably be started early next spring.

Connecticut, Winsted. For the present the organization of the proposed Winsted Braid Mfg. Co. has been declared off as Robert E. Morrey has decided to remain with the Ansonia O. & C. Co., Ansonia, Conn.

*Georgia, Hartwell. Asa G. Candler denies the report that he will remove the Witham Cotton Mills of Hartwell, Ga., nearer Atlanta and double the capacity.

Kentucky, Louisville. The property of the old Mayfield Woolen Mills Clothing Co. at Frankfort and Story Aves. has been purchased by Thomas Bohannon, a real estate man, for $25,000. Reports have been circulated that Mr. Bohannon represented a client who proposed to utilize the property for manufacturing purposes, but Mr. Bohannon states that he secured the property as an individual and intends to hold it as an investment.

Maine, Camden. Dr. W. F. Bisbee was the successful bidder at the receivers' sale of the Mt. Battie Mfg. Co. His bid was $17,000.

*Maine, Oakland. Minority stockholders have secured an injunction preventing the proposed sale of the Oakland Woolen Co.'s property. We are advised that the American Woolen Co. was not negotiating for this plant as rumored.

*Massachusetts, Fall River. Tenants of buildings on the tract of land on the Quequechan River, recently purchased by M. C. D. Borden, have been notified to move by March 1, and it is expected an addition will be built to the Fall River Iron Works Mills.

*Massachusetts, Fall River. Subscriptions are being received for the proposed $500,000 cotton waste mill. The goods to be made are wrapping twine, clothes lines, bleached and tinted cotton.

Massachusetts, Lowell. Some of the looms in Mill No. 10 of the Merrimack Mfg. Co. at Dover, N. H., which was formerly the velvet department of the Cocheco Mfg. Co., are being shipped to the Lowell plant. All the equipment of No. 10 Mill will probably be removed to Lowell on completion of buildings now under construction.

Massachusetts, Monson. W. L. Ricketts and A. E. Shaw of this place and C. L. Ricketts, Manchester, Conn., have bought of A. D. Ellis his interest in the business known as Ellis, Ricketts & Co.

*Massachusetts, North Adams. At the foreclosure sale of the property of the Mayflower Worsted Mills the property was bid in by Robert W. Sawyer, Jr., of the law firm of Brandeis, Dunbar & Nutter of Boston for $20,700. The property was bought for Wm. Whitman & Co., but Mr. Whitman advises they will not operate the plant.

Massachusetts, Northboro. It is now reported that the old woolen mills will be operated by a new company to be incorporated with capital stock of $10,000 which will make worsted goods. Walter Farwell of Northboro heads this movement.

*Massachusetts, Pittsfield. In all probability the space vacated in the lower mill of J. L. & T. D. Peck Mfg. Co. by the removal of their thread machinery will be equipped at an early date for another line of work, but no particulars can be given at this time.

Massachusetts, Worcester. It is reported that Edwin F. Tolman has been appointed receiver of the James H. Whittle Co., Worcester, Mass., builders of wool cards and other woolen machinery.

Mississippi, McComb. The McComb City Cotton Mills have been sold, the transfer to take place January 15. The purchaser is reported to be W. W. Glenn, of Gastonia, N. C.

New Jersey, Jersey City. The Hudson Textile Mills have been incorporated with capital stock of $450,000 to bleach, dye and print textile fabrics. Eugene R. Tappan and George Schmiedel are the incorporators.

New Jersey, Paterson. The Grant Mills Co. has been incorporated with capital stock of $125,000 to manufacture silk fabrics by Joseph B. Whitney, Wm. E. Eaton and Walter Fairchild.

Personals.

John Schofield has been appointed designer at the Cocheco Woolen Mfg. Company, East Rochester, N. H. He comes from Webster, Mass.

E. B. Miles, who has been employed in the engineering department of the American Thread Company of Holyoke, Mass., has severed his connection with that company.

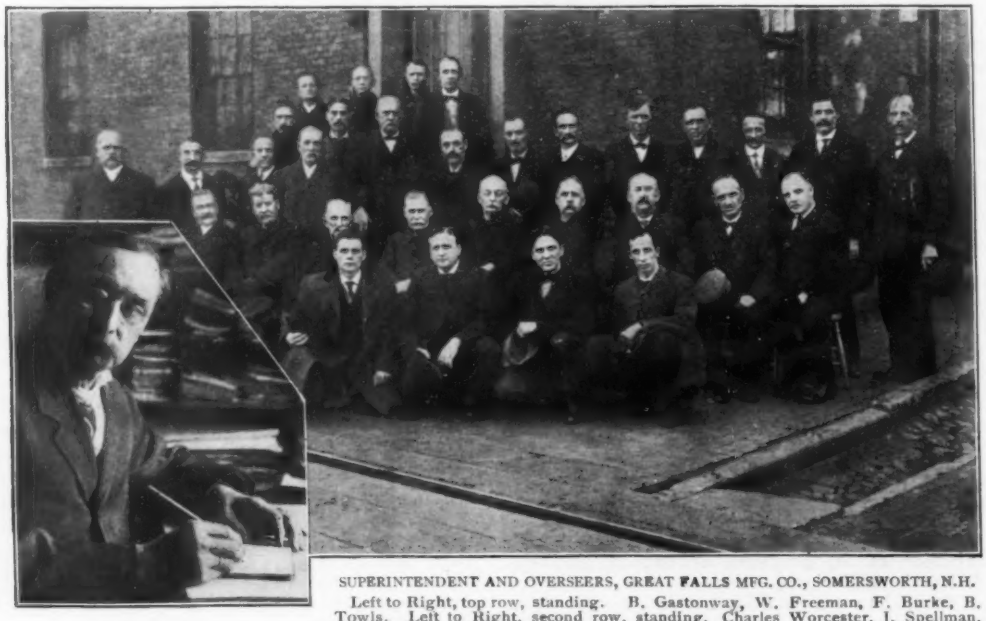
Geo. L. Lyon, overseer of weaving at the Quinebaug Company, Danielson, Conn., has severed his connection with that company. He is succeeded by Arnold Wild.

Mills, Sanford, N. C. He resigned as overseer of carding at the Granby Mills, Columbia, S. C., a short time ago on account of ill health.

Thomas Alsobrook, overseer of carding and spinning at the Siluria Cotton Mills, Siluria, Ala., has severed his connection with that company.

W. A. Smith has been appointed overseer of spinning at the Opelika Cotton Mills, Opelika, Ala. He comes from the Adelaide Mills, Anniston, Ala.

Jesse Davis has accepted the position as over-



P. H. Stiles,
Supt.

SUPERINTENDENT AND OVERSEERS, GREAT FALLS MFG. CO., SOMERSWORTH, N.H.

Left to Right, top row, standing. B. Gastonway, W. Freeman, F. Burke, B. Towls. Left to Right, second row, standing. Charles Worcester, J. Spellman, E. E. Weber, Richard Mason, Henry King, C. Horne, M. Flanagan, John Holler, F. Denzinden, A. Crockrin, Geo. Couthcie, C. Bragden, B. King, Fred Gilbert. Left to Right, sitting. J. Martin, J. C. Grant, Joe Libby, W. H. Whitehouse, W. L. Marston, Geo. Martin, J. Wilkinson, Moses Lowd, R. B. Lane. Sitting on ground, Left to Right. Fred Gongier, F. Burke, J. E. Smith, Ed. Matteley.

James McDougall, agent of the Kennebec Mills, Fairfield, Me., has been appointed agent of the mill at South Royalston, Mass.

E. L. Goble, formerly of the Holt-Williamson Mill at Fayetteville, N. C., has accepted the position as overseer of spinning and winding at the Taylorsville Cotton Mill Co., Taylorsville, N. C.

B. M. Howie has accepted the position as overseer of weaving at the Springstein Mill, Chester, S. C. He comes from Huntersville, N. C.

J. A. Turner has accepted the position as overseer of carding on the night run at Monroe, N. C. He comes from the Elizabeth Mills of Charlotte, N. C.

W. H. Coy has accepted a position as overseer of carding and spinning at the Sanford Cotton

seer of carding at the Brown Mfg. Company, Concord, N. C. He comes from the John Mfg. Company of King's Mountain, N. C.

Ed. Simmons has accepted the position as overseer of spinning at the Toxaway Mills, Anderson, S. C.

A. E. Tuck has accepted the position as overseer of twisting at the Woodstock Mills, Anniston, Ala.

J. L. Lowry has accepted the position as overseer of spinning with the Fairfield Cotton Mills, Winnsboro, N. C.

J. O. Hughes, overseer of spinning at the Walton Cotton Mills, Monroe, Ga., has resigned to accept a similar position with the Ide Cotton Mills, Jacksonville, Ala.

It is reported that J. Harvey Merrill, general manager of the Namquit Worsted Mills, Bristol, R. I., has severed his connection with that company.

W. Cadzow of Louisville, Ky., has accepted the position as overseer of finishing at the Beaver Dam Woolen Mills, Beaver Dam, Wis., succeeding Wm. Clevinger.

James Gallagher has accepted the position as overseer of spinning at the Hudson River Woolen Company, Newburgh, N. Y. He was formerly employed at Enfield, N. H.

CHAS. H. PLUMMER, AGENT, GREAT FALLS MFG. CO., SOMERSWORTH, N. H.

James E. Stanton, Jr., has been elected treasurer of the Acushnet Mills, New Bedford, Mass., to fill the vacancy caused by the death of Jos. F. Knowles.

Fred McCarthy has accepted a position as overseer of dyeing at the Kent Woolen Mills, Worcester, Mass. He was formerly employed with the Cassella Color Company.

Geo. H. Bray, overseer of dyeing for Holden & Fuller, Palmer, Mass., has resigned to accept a position with the Riverside Woolen Company, Stafford, Conn.

Frank C. Holder, overseer of dyeing at the Brown Stocking Company, Ipswich, Mass., has accepted a similar position with the Somerville Bleach, Dye & Print Works of Somerville, Mass.

Robert Armstrong has accepted the position as overseer of dyeing for the Hope Dyeing & Finishing Works, Providence, R. I. He was formerly employed at the Assawaga Company, Dayville, Conn.

D. O. Evans, overseer of weaving at the Taft Woolen Company, Caryville, Mass., has severed his connection with that company. He has been in their employ for a number of years and is succeeded by John Hay of Woonsocket, R. I.

John H. Williams has been appointed agent of the Kennebec Mills, Fairfield, Me. He was formerly superintendent and designer at the Vassalboro Mills, North Vassalboro, Me.

Thos. C. Scott, formerly overseer of carding at the Kennebec Mills, Fairfield, Me., has been appointed boss carder at the Indian Spring Mills, Madison, Me.

L. B. Foss has been appointed overseer of finishing at the Indian Spring Mills, Madison, Me.

W. A. Tucker, superintendent of the Edward T. Steel & Company, Bristol, Pa., has severed his connection with that company. He is succeeded by Wm. H. Rider.

Richard Houseman, assistant designer at the Ray Mills, American Woolen Company, Franklin, Mass., has been appointed superintendent and designer to succeed Robert Schouler, who goes to the Moosup Mills, Moosup, Conn.

Fay Keefe, overseer of dyeing at the Riverside Mills, Stafford, Conn., has resigned to accept a similar position with the Indian Spring Mills, Madison, Me.

Henry L. Stewart, overseer of finishing at the Continental Worsted Company, Providence, R. I., has severed his connection with that company.

Charles L. Ricketts, for several years outside superintendent for E. E. Hilliard Company, Buckland, Conn., has resigned. He is to associate with his brother, W. L. Ricketts and A. E. Shaw. They have purchased the Ellis interest in the Ellis, Ricketts Company, of Monson, Mass.

Harry Davis has accepted the position as master mechanic for the Ipswich Mills of Belmont, N. H.

Robert Jackson has accepted the position as second hand in the weaving department at the Wuskanut Mills, Farnumsville, Mass. He comes from the Geo. H. Gilbert Mfg. Company of Gilbertville, Mass.

Peter H. Trahen succeeds Fred Marcotte as overseer of the silk weaving department at the Newmarket Mfg. Company, Newmarket, N. H.

Max Bohnwagner was presented with a handsome gold watch charm by the employes of the spinning department at the Arlington Mills, Lawrence, Mass. He was obliged to resign his position on account of ill health.

William Kuppers, overseer of weaving at the Rossie Velvet Company, Mystic, Conn., has severed his connection with that company and is succeeded by A. Turand, who was formerly overseer of weaving at the Brainerd & Armstrong Company, Norwich, Conn. Peter Bruggeman, superintendent, and Geo. Greenman, office manager, have severed their connection with that company.

Samuel C. Rowe, overseer of starching and finishing at the Lowell Bleachery Company, Lowell, Mass., has severed his connection with that company.

Wilber Clevinger has accepted the position as overseer of finishing at the Beaver Dam Woolen Mills, Beaver Dam, Wis. He comes from Hanover, Ill.

Matthew O. Hallaran has accepted the position as overseer of carding and spinning at the Home Mills, Fabyan Woolen Company, Staffordville, Conn.

Wm. Smith has accepted the position as overseer of carding in the Gilmanton Dept. of the Ipswich Mills, Belmont, N. H. He comes from Danielson, Conn.

SUPERINTENDENT AND OVERSEERS GREAT FALLS BLEACHERY AND DYE WORKS, SOMERSWORTH, N. H.

L. to R. standing. Jonathan Adams, Richard Shaw, Chas. McGuire, H. A. King, Philip Perrault, John O'Malley, Jos. Ledger, Earl Grant, John McGrail, Arthur Chabot. L. to R. sitting. W. H. Kimball, C. W. Clough, E. R. Lawson. Chas. A. Stewart, Arthur S. Mason.

W. S. Lawson, Agent.

Orlando Saunders, agent of the Assabet Mills, American Woolen Company, Maynard, Mass., has resigned.

Wm. E. Thorn, president and treasurer of Garner & Company, Worth St. and W. Broadway, New York City, controlling large cotton goods interests in New York and Philadelphia, has resigned his position. He is succeeded by Lorenze Temple.

William Barder, overseer of weaving at the Beaver Dam Woolen Mills, Beaver Dam, Wis., has severed his connection with that company.

Otto Haack, from Columbiaville, Mich., succeeds Mr. Barber at the Beaver Dam Woolen Mills, Beaver Dam, Wis., as overseer of weaving.

John Purdon has been appointed overseer of dyeing at the Assawaga Company, Dayville, Conn., succeeding Robert Armstrong, who resigned.

Wm. P. Tenny, formerly boss spinner at the Dexter, Richards & Sons Company, Newport, N. H., has been promoted to the position of superintendent succeeding G. W. Fields, who resigned. Walter M. Poor succeeds Mr. Tenny as boss spinner at the mill.

Henry Tillison has been appointed overseer of dyeing at the Aetna Mills, Watertown, Mass. He comes from the Wood Worsted Mills, Lawrence, Mass.

Chas. M. Sears, superintendent of the Monroe Cotton Mills, Monroe, Ga., has severed his connection with that company.

Jesse Hill has accepted the position as overseer of weaving at the Seminole Mfg. Company, Clearwater, S. C. He comes from Augusta, Ga.

Alex. Myers has been promoted from second hand to overseer of the card room at the Park Woolen Mills, Rossville, Ga.

R. F. Craig will in addition to his present duties at Mt. Holly, N. C., be general superintendent of the reorganized mill at Mt. Island, N. C.

A. B. Cobb, who recently resigned as superintendent of the Knox Net & Twine Co. of Mt. Island, N. C., will return to his same position when the reorganized company takes charge.

C. B. Gunn, former superintendent of the Pepperton Mills, Jackson, Ga., has accepted a similar position with the Lafayette Cotton Mills, Lafayette, Ga.

Charles A. Pender, a well known mill man who has been for some years engaged in the mill business in Texas, is the new superintendent of the Georgia Cotton Mills, Dublin, Ga.

E. M. Holliday has accepted the position as overseer of finishing and general overseer of the cloth room with the Dan River Mills, Danville, Va. He formerly held the position as general inspector for the German American Company, of Draper, N. C.

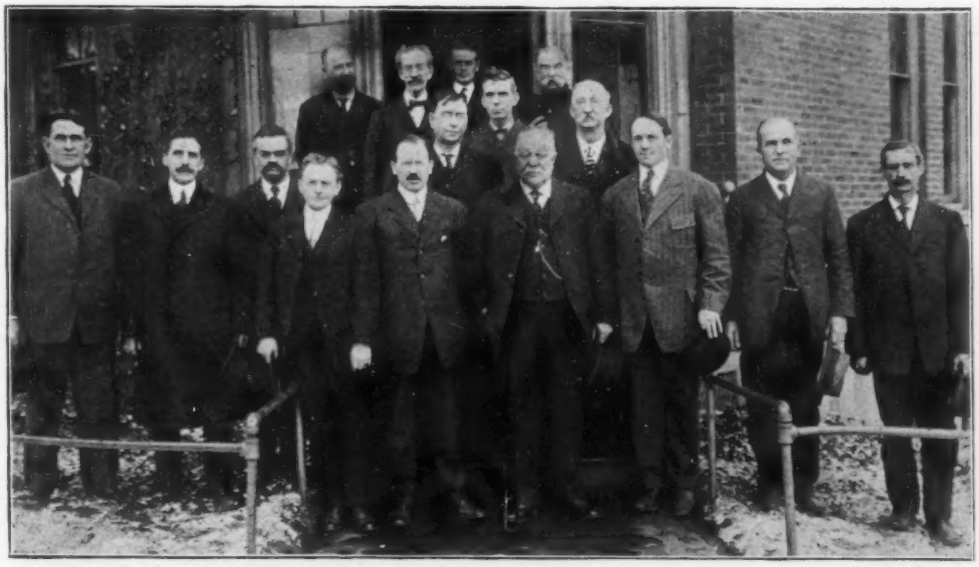
J. M. Lumley has been promoted from overseer of carding to superintendent of the Henrietta Mills, No. 2, Caroleen, N. C.

Chas. Collins has accepted the position as overseer of spinning, spooling, twisting and winding at the Manchester Mills, Macon, Ga.

R. C. Hatcher, formerly of Piedmont, Ala., has accepted the position as superintendent of the Lincoln Mills, Chester, Pa.

Chas. Stiles has been appointed superintendent of the Delburg Mills, Davidson, N. C.

H. F. Jones, formerly overseer of weaving at the Springstein Mills, Chester, S. C., has accepted a similar position with the Highland Park Mfg. Company of Rock Hill, S. C., succeeding J. C. Smith, who has resigned.



AGENT, SUPERINTENDENT AND OVERSEERS COCHECO WOOLEN MANUFACTURING CO., E. ROCHESTER, N. H.

Front Row, Left to Right.—A. L.Cathcart, C. E. Quimby, J. S. Schofield, J. Collier, Supt.; S. C. Meader, Agent; D. F. Stewart, T. H. Gotts, G. A. Jacobs. Second Row, Left to Right—J. W. Jones, B. Eyers, C. A. Sleeper, W. H. Loud. Back Row, Left to Right—G. A. Elliot, S. B. Hayes, R. E. Anderson, W. H. Adams.

Charles Kendall, chief chemist at the Clyde Print Works, is to accept a position as superintendent of the Southbridge Print Works, Southbridge, Mass. Harry Green Jackson, son of B. A. Jackson, president of the corporation, has been appointed chief chemist to succeed Mr. Kendall.

James E. Jager has been appointed superintendent of the Holyoke Plush Company, Holyoke, Mass., succeeding the late John Chadwick.

John Hays has accepted the position as overseer of dressing at the Buell Mfg. Company, St. Joseph, Mo. He comes from Pueblo, Colo.

W. Leon McDavitt, overseer of the yarn department at the Pacific Mills, Lawrence, Mass., has resigned to accept a position as superintendent of the carding department at the Pierce Mill, Fall River, Mass.

Henry Templeton, overseer of finishing at the R. I. Worsted Company, Stafford Springs, Conn, has severed his connection with that company to accept a similar position with the River Spinning Company, Woonsocket, R. I.

Charles Corbett, overseer of carding at the Dustin Island Woolen Mills Company, Penacook, N. H., has severed his connection with that company. He is succeeded by Jos. Warren.

Richard Wheelock, for six years connected with the Earnscliffe Worsted Mills of Providence, R. I., has associated himself with the Continental Worsted Company, same city.

Wm. P. Vaughan has accepted the position as overseer of carding at the Ashland Cotton Company, Jewett City, Conn. He comes from Central Village, Conn.

S. C. Whitaker, formerly of Bessemer City, N. C., has accepted the position as overseer of weaving, slashing and drawing in at the Neuse River Mills, Neuse, N. C.

J. P. Hartsoe has been appointed superintendent of the Weldon Mfg. Company, Weldon, N. C.

J. C. Reece has succeeded Eugene Coble as overseer of spinning at the Holt-Williamson Mill, Fayetteville, N. C.

Eugene Coble has accepted the position as overseer of carding and spinning at the Ida Mill, Laurel Hill, N. C. He comes from the Holt-Williamson Mill of Fayetteville.

T. B. Murphy has accepted the position as overseer of weaving at the Brandon Mills, Greenville, S. C. He formerly held a similar position at the Monroe, Ga., Cotton Mills.

Albert Fletcher has accepted the position as overseer of carding and spinning at the Brown Mfg. Company, Concord, N. C., on the night shift.

AGENT, SUPERINTENDENT AND OVERSEERS SALMON FALLS MANUFACTURING CO., SALMON FALLS, N. H.

Left to Right, standing—E. G. Hill, J. W. Robbins, J. C. Lewis, Jr., J. Lewis, D. F. Page, L. W. Brewer, Orrin M. Rolfe, Wm. O. Buzzell. Left to Right, standing J. W. Harrall, C. E. Crocket, Fred Bois, Jos. C. Hill, R. Nason, W. Pelletier, W. W. Perkins, F. E. Ingalls, J. W. Minahan, Simeon Marcotte, E. F. Drew, John Collins, W. Belanger, L. Landerville, F. Jackosn.

J. Colby Lewis, Agent and Superintendent.

W. D. Hand has been promoted to the position as overseer of twisting in the York Cotton Mill, Yorkville, S. C., succeeding O. G. Kee, who has resigned.

J. T. Douglas has been promoted from second hand to overseer of weaving in Steele's Mills, Cordova, N. C.

J. B. Floyd has accepted the position as overseer of weaving at the Lexington Mfg. Company, Lexington, S. C.

C. L. Kent has accepted the position as overseer of carding at the Edwards Cotton Mills, Crawford, Ga.

Jos. R. Puckette, who has been overseer of carding at the Poulan Cotton Mills, Poulan, Ga., has

severed his connection with that company. David Statham has succeeded Mr. Puckette.

W. A. Smith succeeds Mr. Culpepper as overseer of spinning with the Opelika Cotton Mills, Opelika, Ala. He comes from the Adelaide Mills, Anniston, Ala.

DEATHS.

H. J. Broad, special photographer and traveling reporter for the Textile World Record, died very unexpectedly on January 5 as the result of a slight operation from which no serious effects were anticipated. He had been at work until within a few days of his death. Mr. Broad had been connected with this paper a comparatively short time, but had proved a useful member of our staff. He was an expert photographer and his pictures of mill men have proved an interesting feature of the magazine. The friends that he has made in the textile mill trade will learn of his sudden death with much regret. He leaves a wife and young child.

Charles Horn, a manufacturer of silk ribbons in New York City, died in one of the New York hospitals recently. In 1870 he formed the firm of Bertschey & Horn. This firm removed in 1897 to Titusville, Pa. He is survived by a widow.

Daniel W. Church, who formerly operated the Church Woolen Mills, Wegatchie, N. Y., died recently at Chicago, Ill.

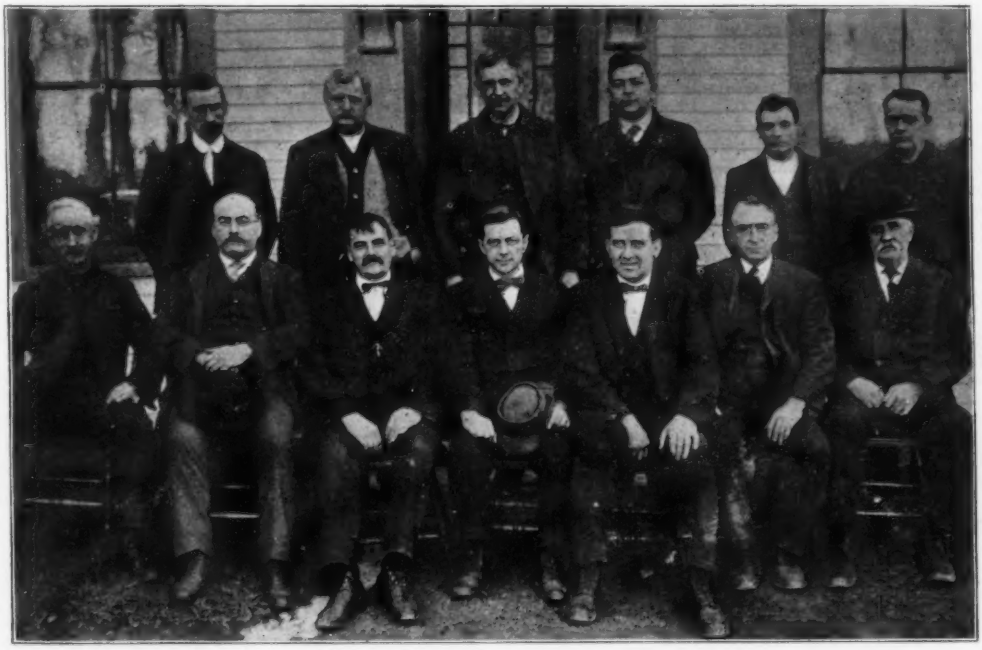
Samuel Mellor, for forty years superintendent of the Samuel K. Wilson Woolen Mills of Trenton, N. J., and one of the most prominent citizens of that city, died at the home of his son-in-law, J. A. Bensel, in his eighty-fifth year.

Frank Clough, manager and superintendent of the Bradford Mills, John & James Dobson, Germantown, Pa., died Thursday, December 9, of heart trouble. He was in his fifty-seventh year and was born in Yorkshire, Eng., and came to this country when he was 28 years of age.

Paul Richter, president of the Richter Mfg. Company, Tenafly, N. J., died at his home in that town at the age of 55 years.

Aaron Lucas, of the firm of B. Lucas & Company, Poquetanuck, Conn., manufacturers of dress goods, died at his home in that town at the age of 61 years. He has been employed in his younger days at the Yantic Mills, Yantic, Conn.; Potter Hill, R. I., and at New Bedford, Mass. He retired from active life in 1908.

Wm. Clark, a prominent Mason and a well known manufacturer of Frankford, Philadelphia, Pa., died at the home of his son-in-law, Dr. A. P. Gray, in that city. Mr. Clark was 77 years of age and died from a complication of diseases. He is survived by a wife, five sons and seven daughters. In 1881 he formed a partnership with William O'Neil for the manufacture of damasks. The firm was dissolved in 1899, when Mr. Clark organized the Waverly Mills, which now occupies an entire block at Cedar and Margaret Sts.



SUPERINTENDENT AND OVERSEERS GONIC MFG. CO., GONIC, N. H.

Left to Right, sitting—J. E. Seavey, J. F. Teaque, T. Wilmot, J. L. Meader, R. T. Toas, L. M. Richardson, Jas. Lucey.
Left to Right, standing—Jos. Speke, W. L. McElwaine, H. H. Meader, Chas. Teague, Chas. Verity.

New Publications.

[Any work noticed under this head can be obtained through the office of this journal.]

Lien Laws of the Southeastern States; by Henry A. Alexander of the Atlanta Bar; The Southeastern Publishing Co., Atlanta, Ga.; 767 pages, 5 1/2 by 9. Price $6.

The industrial development in the Southeast makes a work of this kind of especial value at the present time. The author's object has been to place the information regarding the lien laws of the Southeastern States before the bar and public in a compact form convenient for reference. The statutes with decisions relating to them and a carefully prepared index are given for each of the nine states. Part 2 is a table of cases abstracted. Part 3 is a table of codes containing provisions relating to mechanics' liens. Part 4 is a table of titles in force and repealed, relating to mechanics' liens. Parts 5 and 6 are direct and reverse tables of sections of this compilation with corresponding sections of the latest code.

Notes on Sizing; The Gum Tragasol Supply Co., Hooton, by Chester, England; 40 pages, 4 by 5; Danker & Marston, Boston, Mass., American agents.

This booklet contains much useful information regarding sizing and is in a form suited for carrying in the pocket. The contents are arranged under the following heads: Adhesive Materials, Gum Tragasol, Softeners and Opening Materials, Weighting Materials, Deliquescents, Antiseptics, Mixings for Weaving Only, Medium and Heavy Mixings. Special attention is given to the use of gum tragasol.

The City of the Dinner Pail; by Jonathan Thayer Lincoln; Houghton, Mifflin Co., Boston, Mass.; 186 pages, 5 by 8.

This is a study of the industrial development of Fall River. The author traces the evolution of this great cotton manufacturing center, which he calls the "city of the dinner pail," not as an historical review, but rather as an essay on industrial conditions and the greater problems involved.

The Effect of Scouring Materials on Cotton and Linen (DieWirkung der Waschmittel auf Baumwolle und Leinen); by Dr. W. Kind; A. Ziemsen Verlag, Wittenberg, Germany; 36 pages, 6 by 9. Price $1.

The author deals with the effect of washing materials on cotton and linen from the theoretical as well as the practical standpoint. He has given in a small compass much valuable information regarding this important branch of industrial chemistry. The text is in German.

The Transportation of Gases, Liquids and Solids; by Oskar Nagel, Ph.D., New York; published by the author; 197 pages, 6 by 9. Price $2.

This work gives an account of the theory, construction, operation and application of jet machines, montejus, spray nozzles, etc., for chemical, metallurgical, mining, mechanical and civil engineering. It is divided into the following chapters: Transportations of Gases, Transportation of Liquids, Transportation of Solids, Atomizing Liquids, Condensers, Theory.

There is an appendix containing a chapter on the construction and application of the machines, also numerous technical tables.

Business Literature.

Mechanical Control of Air and Coal; a booklet by the American Ship Windlass Co., Providence, R. I.

A description of the Taylor system of combustion. It is shown that this system has been perfected by the use of a furnace suited to the coal used, and by mechanically controlling the supply of air and coal. The Taylor gravity underfeed stoker provides the proper furnace conditions and supplies the coal; a mechanical draft fan furnishes the air.

The Moore Light; Moore Electrical Co., 169 Melvin St., Newark, N. J.

A booklet describing the Moore light, which is claimed to have great advantages for matching colors. It is an entirely different principle from others, and "comes in long vacuum tubes."

Underwear Machines; Crane Manufacturing Company, Lakeport, N. H.

This is an attractive book of 16 pages printed on coated paper of India tint, illustrated with a cut of a complete machine, and 6 plates showing all parts of the machine, each one being numbered, so that reference to a table makes clear the name of that particular part for ordering.

Two pages are devoted to detailed description of the underwear machines manufactured by the Crane Manufacturing Company in sizes varying from 12 to 23 inches in diameter.

The catalogue is bound in a modern cover of ripple finish and printed in two colors, making altogether not only a thoroughly practical catalogue, but a handsome one as well.

Foster Superheaters. Power Specialty Company, 111 Broadway, New York City.

This company is sending out an attractive catalogue printed in two colors with a handsome embossed cover. It gives a thorough description of the design, material, construction and strength of the Foster Superheaters.

There are several fine illustrations not only of the parts of the heater, but also of installations in connection with different types of boilers.

A part of its 30 pages is devoted to illustrations and descriptions of the Harter Flexible Joint, Gaskets, Metallic Packings and Pyrometers.

Experiences with Gandy; The Gandy Belting Co., Baltimore, Md.

A booklet giving letters of approval from users of the Gandy belting. This booklet also contains price list and rules for finding belt speed, etc.

J. C. Whittles, Kearny, N. J., has issued an illustrated catalogue with testimonials, descriptive of Whittle's automatic cloth dryer and tentering feeds. The pictures show clearly just how the machine works and gives a long list of satisfied users.

Calendars for 1910.

The Draper Co., Hopedale, Mass.

A large wall calendar with a very good reproduction of their L model sheeting loom at the top and a view of their works in colors which is made from one of the new auto-chrome or direct color photograph. The pad is for memorandum use the same as in former years.

The Mason Machine Works, Taunton, Mass., builders of machinery for cotton mills, have issued a large wall calendar showing a very fine picture of their works.

Mayo Knitting Machine & Needle Co., Franklin, N. H.

A particularly handsome wall calendar bearing a picture entitled "End of an Autumn Day."

The Grosser Knitting Machine Co., Max Nydegger, 260 West Broadway, New York, are sending out some beautiful calendars in colors, one of which represents the Bright Angel Trail in the Grand Canon, the other a beautiful reproduction of a painting of a young girl. These calendars are most artistic and will prove a decorative addition to any office fortunate enough to receive them.

The Wisconsin Textile Mfg. Co., Two Rivers, Wis., dealers in hosiery boards, glove and mitten forms, and whose Canadian agency is the Harley-Kay Knitting Machine Co., Georgetown, Ont., are sending out to the trade a very unique calendar in the shape of a square of wood entitled, "Our 1910 Greeting is a Square One."

Wardwell Needle Co., Lakeport, N. H.

A particularly handsome wall calendar, suitable for the library or office, is being distributed by the Wardwell Needle Co.

A. D. Salkeld & Bro., dealers in cotton and worsted yarns, 366 Broadway, New York.

A two-century calendar which is adjusted for each year. It consists of a revolving disc, part of which is exposed. By turning the disc the calendar for any desired year is brought into view. It is useful not only as a calendar for the current year, but as a reference calendar for past and present years.

The American Blower Co.

Pursuing the custom established three years ago, the American Blower Company this Christmas, presented each employe with a sum in crisp new dollar bills, equal to the years of their continued service with the company. Along with the money was given an illustrated booklet, containing a short historical sketch of the institution, of which the employes form such an important part, and all inclosed in an envelope decorated in holiday colors.

Improved Facilities.

Owing to their rapidly increasing business, the Carbolineum Wood Preserving Co. of New York have removed to 182 Franklin St. This will enable them to handle large orders with greater dispatch than formerly, as it will not be necessary to rely on shipments from Germany. Their new quarters also give them much more suitable and commodious offices.

Fancy Knit Goods.

George W. Lindley, 5122 Wakefield St., Germantown, Philadelphia, who is well known to the textile trade as a builder of special machinery as well as a manufacturer of circular and cardigan jacket knitting machines, fingering machines, glove machine cylinders and dials and flat knitting machine beds, desires to draw the attention of the trade to his double rib machines for fancy goods for which he now has a number of orders on hand. The machines are made in any width and can be adapted without any trouble for the making of borders for sweater coats. They are thoroughly up to date in every respect and are made regardless of weight in order that the machine may be perfect in every manner.

A New Ring Traveler Company.

The U. S. Ring Traveler Co. is the name of a new company manufacturing ring travelers. They have located at 92 Westfield St., Providence, R. I., and have their shop fitted up with the most improved machinery for producing their standard spinning and twisting travelers of every description and wire specialties of all kinds. Wm. M. P. Bowen is president and Amos M. Bowen, treasurer. The latter has been associated with the ring traveler business for 18 years. His experience and acquaintance should prove a valuable asset towards building up the business. They report a number of orders already on hand and feel greatly encouraged with the progress made.

Hosiery and Gloves.

O'Callaghan & Fedden, direct mill agents, who have been so long at corner Worth and Church Sts., New York, moved Dec. 1 to larger and more commodious quarters at 349 Broadway, where they will occupy a whole floor. Their line is domestic and foreign hosiery and gloves.

"Rice's Mill White."

This special paint preparation prepared and sold by the U. S. Gutta Percha Paint Company, Providence, R. I., is growing in popularity for use in mills where there is insufficient daylight. This is due to its light reflecting qualities. The makers claim it is much superior to lead and oil and as it can be washed without injury to its glossy surface, the cost of a new coat of paint is frequently saved.

The manufacturers emphasize their confidence in its quality by offering to send a gallon free to any mill owner who will pay the expressage.

Textile Machinery Exhibition.

Plans are being carefully developed for the textile machinery exhibition to be held at the time of the spring meeting of the National Cotton Manufacturers' Association in Boston. In spite of the very short time, and the fact that it was the first exhibition of its kind held in Boston under the auspices of the Textile Exhibitors' Association, a very creditable exhibition was held last year.

This year, with the experience gained and more time to perfect arrangements, the exhibition will far surpass in scope and interest the one held last year. Many of the former exhibitors have already reserved spaces and a number of concerns that did not take space last year have already secured space for 1910.

It is expected that not only will the old exhibition hall be completely filled, but that the galleries and basement will be required to meet the demands. Plans and application blanks have been distributed and a gratifying response has already been made.

Boston Address Changed.

The Power Specialty Company, manufacturers of the Foster Superheaters, 111 Broadway, New York City, have removed their Boston office from 10 Post Office Square to 1031 State Mutual Building, 50 Congress St.

Sample Card.

H. A. Metz & Co., 122 Hudson St., New York, are sending out to the trade an elaborate sample card showing light fast colors on ladies' cloth. This should prove of interest to the trade and they will gladly send copies to any one interested.

The Joseph Dixon Crucible Company announces the publication of "Graphite as a Lubricant," Eleventh Edition. This is just off the press, being the edition for 1910.

Every two or three years the Dixon Company republishes "Graphite as a Lubricant," which has become a standard work with them. Each new edition is thoroughly revised and brought fully to date.

The present edition is more compact than its predecessor, the idea being to concentrate the information into quick, convenient form that is not bulky.

The power house engineer will find the newest edition of "Graphite as a Lubricant" of considerable value to him, since it deals especially with the lubrication and treatment of power house machinery.

Some thought has been put upon the appearance of this last edition, and big readable type with liberal margins obtains throughout the sixty-four pages of the book. Easy to read and worth reading.

A free copy of this Eleventh Edition of "Graphite as a Lubricant," will be sent free to anyone interested in machinery and better lubrication.

Shipping Tags.

THE REQUIREMENTS THEY MUST MEET.

THE SERVICE THEY MAY RENDER.

A shipping tag in nine cases out of ten is but a small necessary but thoughtlessly used clog in the great machinery of business life. In the tenth case, it suddenly develops into a most important factor, for it fails to fulfil its mission, drops by the way or is torn on the journey, and goods are lost and customers disappointed. Expense and trouble follow and time and patience are overtaxed. Then comes the sober after-thought experienced by so many really sharp buyers that a cheap tag is never the most economical. The most economical tag to buy is a safe tag, and an absolute guarantee of safety accompanies every Standard Tag made by the Dennison Manufacturing Co. Stock after stock was tested before the Standard formula was evolved, until finally the tag makers were satisfied and the result is an all-rope, extra string, very tough stock, smooth surfaced, with a good color, sharply cut, reinforced with brass eyelet and the Dennison water-proof patch. This eyelet will not pull out and the tag itself will stand more usage, wear and tear and exposure to elements than one would ever be subject to.

So much for the first service demanded of a tag, but a Dennison tag may, while fulfilling its ostensible mission, earn profit and prestige for its purchaser besides. "Publicity" is a much discussed subject of today. "How to Gain Publicity" is a subject of many an argument and editorial treatise. An easy and effective way to solve the problem is by the use of a distinctly designed tag, appropriate to the merchandise to which it is attached. A tag thus treated sets forth the dealer's trade mark or business, and since the railroads now require the tagging of every separate article in shipment, it often becomes the most prominent object on a railroad platform or express truck, especially if of a strong color. Surely this is valuable publicity and publicity gains at no additional expense.

At their offices, 26 Franklin St., Boston; 15 John St. and 15 W. 27th St., New York; 1007 Chestnut St., Philadelphia; 25 Randolph St., Chicago; 413 N. Fourth St., St. Louis, and branch offices through the country, the Dennison Mfg. Co. are always glad to show samples of their Standard tags, printed with designs that have proven attractive and valuable to leading merchants and to suggest, to sketch, to estimate and to manufacture tags that will prove safe and valuable for other dealers' use.

The Connecticut Co., through their engineers, the Westinghouse, Church, Kerr Co., have just purchased four 6-retort Taylor stokers for use in connection with four 500 horse power of Hornsby boilers at their power plant in Waterbury, Conn. This is a second order from this company.

The Farwell Mills of Lisbon, Me., have recently placed repeat order for humidifiers with the American Moistening Co.

Moisture in Cotton.

Consul James E. Dunning, of Havre, in a reply to an inquiry made by a chamber of commerce of one of the cotton-producing States, reports as follows.

For a number of years many complaints have been made by French spinners on account of the excessive degree of moisture contained in cotton imported from the South Atlantic States, the humidity existing, for the most part, in or near the center of the bale. This is due to the steam or water used in pressing the staple, and which not only injures the cotton itself but also gives it a fictitious weight, which is lost shortly after the bale is opened and evaporation takes place.

With a view of officially determining the degree of moisture existing in cotton and establishing both the extent of the damage sustained and the depreciation in value occasioned thereby, the French mill owners recently sent a delegation, composed of prominent representatives of the spinning industry, to confer with the cotton brokers and merchants of Havre and discuss the possibility of establishing a testing bureau or laboratory.

Up to the present time the brokers and merchants of this port, which is one of the most important cotton markets of the world, have not favored such a proposition, their objection being that while the degree of moisture could, from a purely scientific point of view, be established with great precision, the method proposed would fail to be of practical value. They aver that in order to arrive at a fair estimate it would be necessary not only to test samples from every part of the bale, but to take them from each and every bale imported, so great do the hygrometrical properties of cotton vary.

On the other hand, the objections raised do not appear to have in any way altered the determination of the spinners to establish such a laboratory, and it is probable that the project will be sooner or later put into execution. In such an event there is no doubt that the degree of moisture found in cotton, if the same be exclusive, will lead to numerous claims, and it appears reasonably certain that the validity of such claims can not be passed over or ignored. This should lead American shippers in their own interests to see to it that the staple which they send abroad contains no moisture. [A copy of rules relating to the sale of American cotton at Havre, revised by the syndicate of the Havre cotton trade, and which went into effect on July 11, 1905, was forwarded by the consul and may be seen at the Bureau of Manufactures.]

After thoroughly trying out over a thousand horse power of Taylor stokers during the past year at their Pittsfield, Mass., plant, the General Electric Co. have just purchased two 6-retort Taylor underfeed stokers for two additional 500 horse power Stirling boilers, which they are to install immediately.

Michigan, Middleville. A new boiler is being installed in the plant of the Globe Knitting Works to give additional power and heat.

Two Old Companies Consolidate.

The Lombard Machine Company, established in 1823 and one of the oldest concerns manufacturing cards for woolen and worsted mills, and the long established and well known machinery and mill supply house of Crawford & Co., which was established in 1847, have both been taken over by a newly organized company to be known as the Brierly-Lombard Co.

Mr. J. T. Brierly, the president, has been with Crawford & Co. for the past 23 years and Mr. R. K. Hyde, the treasurer, has for many years been connected with Brown & Sharpe Manufacturing Company of Providence, R. I.

The supply department will remain at its present location, 633-665 Main St., and the manufacturing department at the corner of Stafford and Heard Sts., Worcester, Mass.

Direct Current Motors.

Small direct current motors have proved their value in every modern industry and are used for a great variety of applications, from running lathes to operating organ blowers. The application of these motors to laundry apparatus, printing presses and other machinery with similar requirements, has brought about changes and improvements in the respective industries which are having an important effect on their development. For this reason a bulletin just issued by the Crocker-Wheeler Company of Ampere, N. J., describing apparatus of this type is of interest to every manufacturer. This pamphlet is well illustrated with halftone engravings, showing applications of Crocker-Wheeler motors to various types of machinery. It also contains a lot of very interesting and valuable engineering information. A copy will be sent on request. In writing ask for Bulletin 118.

Bellicosa.

A new softening powder for cotton and woolen goods is now on the market which is claimed to be much more economical than any similar material used heretofore. The Arabol Mfg. Co., 100 William St., New York, makers, call it Bellicosa. They claim it will do ten times as much work as has heretofore been possible. The practical tests made in several factories have given very satisfactory results. Coming in powder form it causes an additional saving in transportation since no freight is paid for the water.

The Utica Steam & Mohawk Valley Cotton Co. of Utica, N. Y., have placed a large repeat order for humidifiers with the American Moistening Co., Boston, Mass.

The American Moistening Co. report a large volume of business, having received orders since the first shipment of the Comins sectional humidifier, June 22, for over 3,000 humidifiers.

Circulation and Advertising Contract.

MEETING OF TECHNICAL PUBLICITY ASSOCIATION.

The Technical Publicity Association held its December meeting on Thursday, the 9th, at the National Arts Club, 14 Gramercy Park, New York. After the usual informal dinner a lively discussion ensued over the subject of circulation and the introduction of the proposed uniform advertising contract for trade papers. F. H. Gale, in charge of advertising for the General Electric Company, Schenectady, N. Y., took his turn at presiding during the debate. The attendance was large, and the participation in the discussion of the prominent technical advertising men and trade paper publishers who were present made the session a most profitable one.

William H. Taylor, treasurer and manager of the Iron Age, opened the discussion, giving it as his opinion that the true measure of a publication is its editorial quality. He said there was no more discriminating class of people in existence than subscribers to a publication.

Mr. Taylor said that advertisers should put themselves in the proper frame of mind in approaching the circulation question. He granted their perfect right to know how many and who read a publication, and he said no good publication refuses such information. The trouble has been, he said, not that the publishers have been ashamed of their circulation, but that wrong deductions may be made when the statement of a reputable publisher is placed in comparison with an untruthful one. Mr. Taylor made the first public announcement of the circulation of the Iron Age.

H. L. Aldrich, publisher of International Marine Engineering and the Boiler Maker, cited his papers as an instance of necessarily small circulation with intensified buying power in which quality was by far the greater consideration. C. S. Redfield, Advertising Manager Yale & Towne Mfg. Co. and President of the T. P. A., here explained how members considered the circulation statements of publishers, being in some cases absolute sworn statements, also the possibility of detecting the liars.

John McGhie of the American Machinist told about the passing of old-time advertising solicitation in which the hypnotic eye played a prominent part, and said that after trying all other policies, publishers have learned that the truthful policy is the best. He said the advertiser buys reputation and editorial force quite as much as circulation.

O. C. Harn, Advertising Manager of the National Lead Company, said that every good advertising man was perfectly aware of the value of quality in circulation, but said that, nevertheless, it came down to quantity after all, but based on judgment of that quantity from a quality standpoint. F. R. Davis, of the General Electric Company, said that many publishers seemed to feel that advertising men know their own business, and tried to lead them into unprofitable contracts.

H. M. Sweatland, publisher of Automobile, said it was his purpose as a publisher to furnish maximum quantity, but that for a class paper to go beyond a certain quantity was simply to vitiate itself. A phenomenal solicitor, he said, once got a thousand subscriptions within a radius of twenty miles, but after two years only one more subscriber was on the list for that district than there was prior to his solicitation. J. George Frederick, managing editor of Printers Ink, spoke for known circulation, and the good prospects for a uniformly high standard of circulation statement.

The question of a uniform advertising contract was then taken up with a great deal of interest. A committee of the Association, headed by H. M. Davis, distributed the proposed uniform advertising contract. The matter will be taken up for final action at the next meeting, Jan. 21st.

Effect of Soot on Boiler Tubes.

The quantity of air admitted to a boiler furnace is a matter having far-reaching effects. With hand firing, frequent opening of doors is absolutely necessary. Advocates of this method say that in this way air is supplied to the top of the coal, and, uniting with the gases arising from the coking fuel causes complete combustion. When the air thus admitted is cold it reduces the temperature of the gases and of the heating surfaces, and in thus retarding combustion increases the deposit of soot. Every engineer and fireman knows that soot is a poor conductor of heat, but to what extent soot prevents heat transmission is not as yet definitely known.

Some boiler trials were recently conducted to determine this loss. During the first series of tests soot was allowed to remain on the tubes. At 212° F. the evaporation per pound of dry fuel was 6.2 pounds. The dry coal per square foot of grate surface was 13.4 pounds, and the temperature of escaping gases 627° F. Before the second series of tests was made the tubes were carefully cleaned, with the result that at 212° F. the evaporation per pound of dry coal increased to 7.04 pounds of water, a gain of 13 1/2 per cent. The saving is still further evident from the fact that the amount of dry coal consumed per square foot of grate per hour was reduced from 13.4 to 9.09 pounds, and the escaping gases to a temperature of only 546°.

Evidently for best economy cold air must not be allowed to cause the deposit of soot. Probably the easiest way to prevent this is by the use of a mechanical stoker. The Taylor underfeed type maintains an incandescent fuel bed, the coal being fed beneath the hot coke. Both fan and stoker are driven by the same engine so that the air supply is automatically adjusted to the rate of feeding fuel. The advantage of thus controlling the volume of air is that the air is not only of the proper quantity, but when it has passed through the incandescent coal it is of the high temperature necessary to complete the combustion of the gases, and at the same time maintain the high temperature of the heating surfaces.

Pennsylvania, York. A new knitting plant, which started the middle of November, is known as the Eimerbrink Hosiery Co., and has commenced operations on cotton seamless half hose. W. J. Divet will be the superintendent of the plant and John Eimerbrink will do the general buying.

The Pennsylvania Dye and Bleach Works.

A busy dyeing and bleaching plant is that of the Pennsylvania Dye & Bleach Works, at New Cumberland, Pa., dyers and bleachers, printers, extractors and finishers; printers of hosiery, underwear, yarns, etc., making a specialty of sanitary fast black hosiery dyeing. To accommodate their many customers in the Schuylkill valley, they have also arranged to start a plant at Pottstown, Pa., which they expect to have in operation by the first of the year. They have remodeled a building and have added quite a lot of new machinery and are in a position to handle about 5,000 pounds of goods daily by the most up-to-date methods. Samuel F. Peters is the secretary and manager of the plant, and Charles S. Madeira, treasurer. The two plants will be run under the supervision of Mr. Peters and they invite manufacturers to communicate with them either at the New Cumberland or Pottstown plant.

Removal.

The officers of Messrs. Morrison & Vaughan, yarn dealers and commission merchants, and of Wanton Vaughan, cloth broker, have been moved from 77 summer St. to the new building of the Boston Safe Deposit & Trust Co., 201 Devonshire St., Boston.

Triplex Thread Counter.

Charles Lowinson, 395 Broadway, New York, reports many sales of the triplex thread counting micrometer. Thirty-two are now in use in Fall River. The Lonsdale Co. have adopted it for use in their weaving, bleaching and analytical departments. Other concerns who have recently adopted it are B. B. & R. Knight, Providence; D. Goff & Sons, Pawtucket; Grosvenor Dale Co., Providence; U. S. Finishing Co., Glen Lion Dye Works, Atlantic Mills, New Bedford Textile School, Paterson Silk Institute and others It is a very valuable instrument in analyzing fabrics and ascertaining the construction of goods.

A Successful Southern Mill Man.

It was not so many years ago when Southern manufacturers looked to the North for their superintendents and overseers, but a new generation of practical mill men has been reared in the South and some of the ablest managers are Southern born and have acquired their experience in Southern mills. One of these self-educated and practical men is J. A. Jenkins, superintendent and a large stockholder in the Gray Yarn Mill, Woodruff, S. C. Beginning at the bottom and thoroughly learning all the elementary principles of the textile business, Mr. Jenkins gained his first position of responsibility with the Fountain Inn (S. C.) Cotton Mills, where he became overseer of carding and spinning. Two years later he entered the service of the Woodruff (S. C.) Cotton Mills and started the cotton and spinning departments of their new mill, remaining with them for two years, until offered a more remunerative position with the Warrenville (S. C.) Cotton Mills, subsequently filling similar posts at Lockhart and Whitney, S. C. When the Gray Yarn Mill Co. was organized a year or more ago, Mr. Jenkins found the opportunity to become financially interested in the project and under his able management a large business was quickly built up for their yarns, and which has grown to such large proportions that they are considering an increase in the plant in the near future.

The Saratoga Victory Mfg. Co. of Victory Mills, N. Y., have placed a repeat order for humidifiers with the American Moistening Co. of Boston.

Monaghan Mill Electrified.

The General Electric Co. has installed in the Monaghan Cotton Mill, Greenville, S. C., 24 motors aggregating 2,600 h. p. which will be driven by current furnished by the Southern Power Co. The steam plant will be left intact for emergency. The mill village has been equipped with 280 sixty-candle power Tungsten street lamps and every dwelling has been wired for incandescent lamps. The electrification is complete in every detail and the mill village now presents a beautiful picture when the shadows fall each night.

Mayor Vandergrift.

Elias T. Vandegrift, well known to textile manufacturers as a manufacturer of all sorts of spindles, assumed the office of mayor of Elmer, N. J., on January 1. His election was gratifying evidence of the esteem and high opinion in which he is held by his neighbors and townspeople. There was no opposition; business men nominated him by petition and he was endorsed by the Democratic party at the primary election, the Republican party making no nominations against him. The former mayor ran independently, but Mr. Vandergrift received a larger majority than the other man had votes.

Christmas at the Johns-Manville Mills.

Christmas was celebrated in a very enjoyable manner by the operatives of the Johns-Manville Co., Brooklyn, N. Y. A large Christmas tree was set on a platform and decorated with colored electric lights. One of the girls then appeared as Santa Claus and gave away some very valuable presents. T. J. Nevins, the designer, received a gold mounted fountain pen, a gold mounted pipe and a safety razor, which were given by the weavers in the employ of the company. Mr. Brong, the overseer of weaving, received a gold mounted clock. The affair, which was a surprise to nearly all present, was thoroughly enjoyed. Each one of the married men received a turkey, while the single men each received one dollar in cash from the firm.

The Lawrence Mfg. Co., Lowell, Mass., have placed a large repeat order for humidifiers with the American Moistening Co., Boston, Mass.

Recent Textile Patents.

BOBBIN HOLDER. 941,595. Simon W. Wardwell, Providence, R. I.

CARD CLOTHING. 944,031. Josef J. Gillet, Aix-la-Chapelle, Germany.

DYEING WOOL. 941,399. Homer Winslow, Providence, R. I.

DYEING. Yarn Support for. 942,856. John C. Hebden, Providence, R. I., and Frederick H. Daniell, Franklin, N. H.

FABRICS WITH FLUIDS. Apparatus for Treating. 943,632. Emil Gminder, Reutlingen, Germany.

FIBERS, Threads and Fabrics. Improving Textile. 942,395. Gustav Kraemer, Cologne, Germany.

KNITTING MACHINE. 943,230. Albert M. Pigeon, Philadelphia, Pa.

KNITTING MACHINE. 944,011. Wilson W. Burson, Rockford, Ill.

KNITTING MACHINES. Racking Device for Flat-bed. 943,921. Edouard Dubied and Bruno Popp, Couvet, Switzerland.

KNITTING MACHINE Yarn Changing Mechanism. 944,012. Wilson W. Burson, Rockford, Ill.

LOOMS. Filling Detector Mechanism for Weft Replenishing. 943,702. Benjamin F. McGuiness, Worcester, Mass.

LOOM-DOBBY. 942,826. Thomas Haworth, Joseph Briggs and Wm. Ayrey, Rishton, England.

LOOM. Weft Replenishing. 943,758. Benjamin F. McGuiness, Worcester, Mass.

LOOMS. Filling Exhaustion Indicating Means for. 943,846. Alonzo E. Rhoades, Hopedale, Mass.

LOOM LET-OFF Mechanism. Narrow Ware. 943,741. James C. Gaynor, Pompton, N. J.

LOOM LET-OFF Mechanism. 941,380. Jonas Northrop, Hopedale, Mass.

LOOM for Weaving Tufted Fabrics. 942,935. Horace Wyman, Worcester, Mass.

LOOM. 943,028. Louis H. Landry, Uxbridge, Mass.

LOOMS. Thread Parting Mechanism for. 943,957. William H. Spencer, Methuen, Mass.

LOOM. Weft Replenishing. 943,896. Eppa H. Ryon, Worcester, Mass.

LOOMS. Pick Counter for. 943,049. Melvin L. Stone, Lewiston, Me.

LOOM Picking Motion. 941,844. Wm. H. Ayer, Claremont, N. H.

LOOM Thread Guide. 943,270. Joshua Robinson, Lawrence, Mass.

LOOM TEMPLET. 943,150. Louis H. Landry, Uxbridge, Mass.

LOOMS. Tuft Yarn Carrier for Pile Fabric. 942,999. Cecil C. Brinton, Stourport, Eng.

LOOM. Shuttle Changing. 943,038. Benjamin F. McGuiness, Worcester, Mass.

LOOM Harness Motion. 943,262. David D. Miller, Middletown, Conn.

SPINNING SPINDLE. 942,777. John V. Cuniff, Fall River, Mass.

SPINNING and Like Machinery. Thread Guide for Cotton. 942,362. Joseph and Edwin Appleby, Aston, Eng.

SINGEING MACHINE. 943,657. David Davis and Arthur O. Berry, Paterson, N. J.

STOP-MOTION. Twister. 941,463. Alonzo E. Rhoades, Hopedale, Mass.

SPINNING MACHINE Speed Changing Device. 941,645. Frederick H. McDevitt, Easthampton, Mass.

SPINNING APPARATUS. Traverse Motion for Yarn. 941,648. Alonzo E. Rhoades, Hopedale, Mass.

SPINNING MULES. Reversing Mechanism for the Band Cylinders of. 942,752. John H. Ryalls, Charlottesville, Va.

TEXTILE FABRIC. 944,125. John C. Brooks, Paterson, N. J.

TEXTILE Conditioning Apparatus. 941,382. Isaac E. Palmer, Middletown, Conn.

Recent Textile Trade Marks Registered.

"Rival" Sheetings. The New York Mills, N. Y.

"Fast Limited." Overalls and coats. Detroit Overall Co., Detroit, Mich.

"Halfmoon." Coats, capes, etc. Harry Kitzinger, New York.

"Barbarossa." Silk piece goods. B. Altman & Co., New York.

"Polar." Wool blankets. The Pittsburg Dry Goods Co., Pittsburg, Pa.

"Tiger." Hosiery. Chas. Chipmans Sons, Easton, Pa.

"Pirate." Hosiery. Chas. Chipmans Sons, Easton, Pa.

"Punch and Judy." Hosiery. Chas. Chipmans Sons, Easton, Pa.

"Ajax." Overalls. The Pittsburg Dry Goods Co., Pittsburg, Pa.

"Fairy." Wool blankets. The Pittsburg Dry Goods Co., Pittsburg, Pa.

"Sola." Silk piece goods. Susquehanna Silk Mills, New York.

"E. McK. & Co." E. McKittrick Co., New York.

"Woodchuck Mills." Chuck Bros. & Davis, New York.

"Jumbo." Hosiery. Old Fort Knitting Mills, Fort Wayne, Ind.

"Economy." Hosiery. Brown-Durrell Co., Boston, Mass.

"The Duquesne." Wool blankets. The Pittsburg Dry Goods Co., Pittsburg, Pa.

"Durbar." Cotton piece goods. Fred Butterfield & Co., New York.